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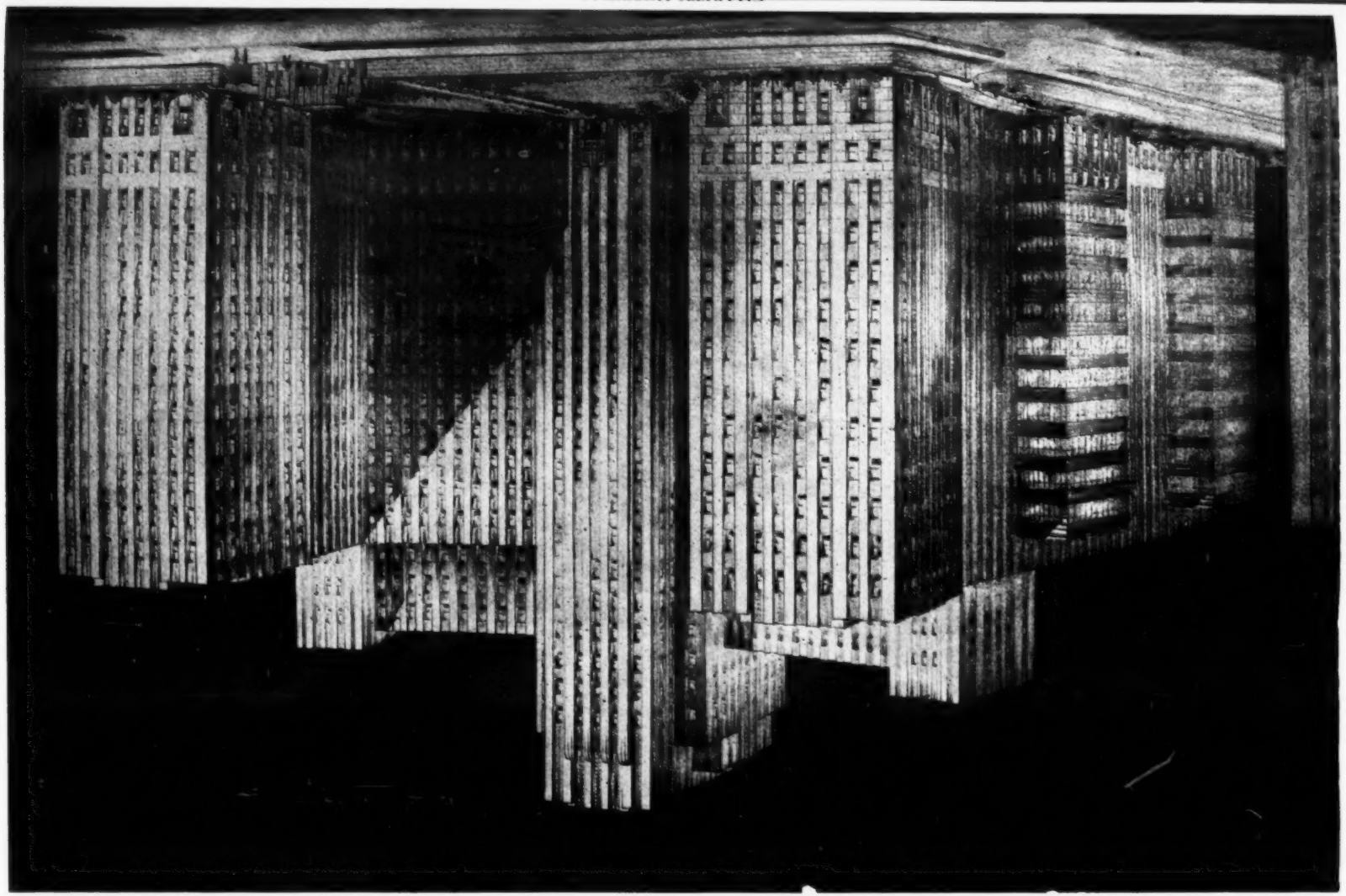
EDITORIAL

THOSE WHO ATTENDED the 44th Meeting of the Medical Library Association must have felt that it marked the end of our isolationism if we ever had any. At all events it signified the beginning of an era of coöperation and helpfulness which may lead to greater things. There was an air of serious attention to everything that might help the war effort and every representative present seemed ready to give devoted service to the limit.

New Orleans was the same New Orleans except that it was more crowded and men in uniform were everywhere. Most of them seemed to have a girl on one arm and sometimes one on each arm. The Editor found the oysters as good as ever; Dr. Matas, the city's first citizen, was the same charming and gifted person as thirty years ago, and the perfume shop on Royal Street smelled as of yore. Somehow or other you don't ever get nostalgia in New Orleans and if it wasn't for your rheumatism, you could beat around town and be young again. This is not the case with other cities, most of which have changed beyond recall.

Going to conventions is harder than it was. You must get your tickets long in advance and even then the chances are you have crowded out some important person who is helping to win the war. The cars are full of soldiers, some of them merry fellows indeed, who are in one continuous procession toward Australia by way of the dining car. Sometimes the dining car isn't there and you have the experience of getting off your train in the early morning and racing upstreet for the ham and eggs. It is reminiscent of forty years ago when trains always stopped to let the passengers eat all they could for fifty cents. Harvey improved the fare with his dollar meals, but you don't hear so much of him now.

The full account of the happenings in New Orleans, large and small, will appear in the October number, the fifth and last of the present volume. In 1943 we start with a new volume, a clean slate, and high hopes for the new year.



MEDICINE IN THE CONFEDERACY*

By Mary Louise Marshall

In these days of shortages and priorities, of rationing and substitutes, of conservation of our natural resources and more complete use of indigenous products, of organization for military service and the adaptation of each citizen to the work for which he is most suited, of consequent economic and domestic readjustments, it has seemed to me that it might be interesting to learn whether this state of affairs, so vital to us, is parallelled to some degree in other times and another war. The people of the South in the days of the Confederacy faced many problems similar to our own. Without regard to the justice of their cause, no one can doubt the whole-hearted conviction, the strength of purpose, the heroism and the sincerity of the men and women of the South. It is undoubtedly true that in time of disaster, when confronted by overwhelming necessity, invention is stimulated and intelligence is aroused. Their resourcefulness and courage under conditions of enormous difficulty, may serve today for us as an inspiration in the turmoil which engulfs the world.

The South, even today, is an agricultural country. Its economic welfare depends on its natural resources, the products of its soil, and their marketing. This was true even more in the days preceding the war between the States. The opening of hostilities found the South completely unprepared, both economically and for military service. Almost immediately a blockade was established which quite effectively prevented importation of munitions and manufactured products from abroad. Since shipping was controlled to a great extent by northern firms, there were few ships or shipyards available to build a fleet for blockade-running. The Navy of the Confederacy was never large.

From a medical point of view, also, complete organization was urgent. On January 1, 1861, the Medical Corps of the U. S. Army consisted of 30 Surgeons and 83 Assistant Surgeons. Of these 3 Surgeons and 21 Assistant Surgeons resigned to join the Confederate forces. The *Medical Corps of the Confederate States Army* was authorized by Act of the Confederate Congress in Montgomery, February 26, 1861, and its organization was planned on that of the U. S. Army. Dr. D. C. DoLeon, of Mobile, Surgeon-resigned of the U. S. Army was made first Surgeon-General. Soon afterwards, however, when the Capitol was moved to

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Richmond, Dr. DoLeon was succeeded by Dr. Samuel Preston Moore, who served in this capacity until the end of the war.

Surgeon-General Moore was born and educated in Charleston. He had served in the Medical Corps of the U. S. Army from 1835, as Assistant Surgeon, then as Surgeon, resigning in February 1861. He took charge of the Medical Department of the Confederacy in June, 1861. The problem which confronted him was enormous. The physicians of the South were almost entirely from rural communities and were completely untrained in military practice, as well as being unskilled in surgery and in the administration of hospitals. Many of the younger physicians, in the flush of patriotism, had enlisted in the ranks. No adequate supplies, raw or manufactured, were available. By early proclamation, medical and surgical instruments, medicines, medical books and appliances had been declared contraband of war. It is a matter of record, that when Senator Gardner of New York on the floor of the American Medical Association in 1863 endeavored to enlist aid in having repealed the inclusion of medical supplies on lists of contraband materials, he was hissed from the hall. The medical department was compelled to improvise and provide for the manufacture of such surgical instruments and armamentaria as could not be secured by blockade runners or by capture. Substitutes for necessary medicines must be sought among the indigenous products of the country, laboratories must be established to prepare and distribute medicines so prepared and the physicians must be instructed in their use. Appropriate sites for hospitals must be selected and the buildings must be constructed. Last and most important, medical personnel to care for sick and wounded must be chosen, and organization of the entire medical department effected.

Chisolm describes the organization thus: "In the Confederate service, but two grades in the medical staff are recognized, Surgeons and Assistant Surgeons with the respective assimulative rank of Major and Captain. The head of the medical department is presided over by a Surgeon-General, with the rank of Lieutenant Colonel of Cavalry, which is the highest grade in the service, and which position is held by seniority of commission. There are other meritorious positions, viz.: of Medical Directors and Inspectors for field and hospitals, and Medical Purveyors of the Army which are appointments by the Surgeon-General, and are considered offices of responsibility and trust, although without increased rank."

"In the Confederate service each regiment, nominally of 1000 men, has one Surgeon and one Assistant Surgeon. Where several regiments are united into brigades, the oldest commissioned surgeon in the brigade assumes the position of Brigade Surgeon, who, however, is not relieved from regimental duty. When brigades are thrown together into divisions, the surgeon upon the staff of the Major-General assumes the

position and duties of Division Surgeon. The union of several divisions, comprising a corps d'armée under the command of a Lieutenant General, has a chief medical officer, with the title of Corps Surgeon, or Medical Director of the corps; and when two or more corps d'armée form an army, the medical affairs of such a body of men are supervised by a Medical Director recommended by the Surgeon-General, and appointed by the Secretary of War, at the solicitation of the general in command."

"In times of peace, two medical regimental officers are found scarcely sufficient to attend to the sick; while in times of epidemics or war, they are incompetent to offer that assistance which the sick and wounded require. Many a life has been sacrificed to procrastination. Upon the first and immediate attention to the wounded on the battle-field depends, in a great measure, the success of treatment; and in any encounter which deserves the name of a battle, the wounded must necessarily be neglected by this deficient medical staff."

In 1863 he wrote, "Our large experience has proved the inefficiency of our regimental medical staff. . . . In active service, every full regiment should have at least one Surgeon and two Assistant Surgeons, these differing only in rank, their duties being similar. Besides the regular regimental Surgeons, there is in the Confederate service, a medical corps to take charge of military hospitals, while regimental officers accompany their commands."

North Carolina seems to have been the only state which appointed a Surgeon-General of her own, whose particular duty it was to provide special care for her sick and wounded soldiers. A report from this office for the year 1864 gives notation of moneys collected and expended for this purpose, in the scattered hospitals of the Confederate States.

The Louisiana Hospital, in the vicinity of Richmond was administered by Dr. Felix Formento, Jr., of New Orleans. Nursing was here under the direction of the Sisters of Charity. After the battles around Richmond, this was one of the hospitals cited publicly as having a low rate of mortality. Tents of the type used as regimental hospitals were here employed in the care of contagious diseases and severe infection. Chloroform, here as in other hospitals, was the anesthetic employed and particular mention is made of the fact that no ill effects were noted in its use. While no evidence for the belief has been located, it is surmised that Louisiana troops serving in Virginia were assigned to this hospital.

In the organization for hospital service, the Quartermaster's department furnished tents, clothing, straw for bedding, fuel, etc. for the sick and wounded. The Commissary Department furnished food. The ration of the soldier was valued by law and at the end of the month the hospital was debited with subsistence drawn from the commissary stores. Any credit was payable in cash by the commissary to the Surgeon in charge,

who expended this fund by voucher, reported to the Surgeon-General. Funds thus accumulated went for the purchase of medicines, surgical instruments and any extra delicacies which might be available for the use of the sick.

Early in the War, *Medical Examining Boards* were established by the Surgeon-General. All physicians in service were required to appear before these Boards and those who refused were dismissed from the staff. Those who failed in this test were used as hospital stewards, attendants and nurses until through study and instruction they passed a subsequent examination.

Since the Official Records of the Surgeon-General's Office of the Confederacy were completely destroyed by fire on the night of the evacuation of Richmond, April 2, 1865, the exact numeration of the Medical Staff can only be estimated. Dr. Joseph Jones believes the total number of Surgeons and Assistant Surgeons, of the Army and Navy to have been somewhat under 3,000. From the records of scattered hospitals it is judged that more than 3,000,000 cases of wounds and diseases were cared for by this personnel, in addition to the care of some 270,000 prisoners.

Prior to May, 1862 medical officers were held as prisoners, just as were other officers, but were often permitted to treat their fellow prisoners. When General Jackson entered Winchester, Virginia, on May 25, 1862 he found in the Union Hotel, seven Federal surgeons caring for about 300 sick and wounded. The General directed that they be allowed to continue in charge undisturbed and that other sick and wounded from among the Union forces be sent there. They were given Federal prisoners to serve as nurses and were furnished by the Commissary with provisions. On May 31, when General Jackson retired, the Provost-Marshal paroled all the physicians in the hospital. They signed a document that they would report to the Secretary of War in Washington, and endeavor to have released a like number of Confederate surgeons. From this incident grew the practice on both sides of returning to their regiments all captured medical officers. This exchange of surgeons preceded the similar ruling of the Red Cross by about two years.

The Confederate conscript law enrolled and actually put into the field every able-bodied man between 18 and 45. In addition each state enlisted for local defense, all who could bear arms between the ages of 16 and 18 and from 45 to 60. The problems confronting the limited personnel of the Medical Department in caring for the army were enormous. Most of the recruits came from rural communities and had never been exposed to the contagious diseases of childhood. Epidemics were the rule. It was estimated that it required twelve months for a new recruit to exhaust the list of initiatory diseases and to inure himself

to the privations, exposures and labors of army service. The medical staff endeavored to enforce rules of hygiene, but sanitary conditions were deplorable and the incidence of disease far exceeded that of wounds. It is said that in Chimborazo Hospital in Richmond in a two-year period only 1 admission in 7, and 1 death in 8 resulted from wounds.

One of the earliest and most urgent of the problems confronting Surgeon-General Moore was the construction of hospital buildings and the organization of *hospital service*. The area surrounding Richmond developed rapidly as the greatest hospital center in the Confederacy. Large tobacco warehouses were used as temporary structures; the boilers became soup kettles. All available lumber was commandeered for the fashioning of beds and other necessary furniture. Dr. James B. McCaw was chosen to head the first large hospital unit, planned by the Surgeon-General, and named Chimborazo Hospital. Dr. McCaw was a native of Richmond, educated in New York. His work in this position is one of the noteworthy achievements of the War.

Following the Battle of Manasses, the wounded poured into the city, before accommodations could be provided for them. The warehouses were filled. In one week it was necessary to care for 2,000 patients; in two weeks for 4,000. Noting the spread of contagious diseases in large buildings inadequately supplied with hygienic facilities, Surgeon-General Moore devised the plan of unit hospital buildings, 100 feet by 30 feet, each one story high. These units were constructed as rapidly as possible, eventually totalling 150 in this one hospital. Five divisions were organized, with 30 wards to each division, the capacity of each ward being from 40 to 60 patients. One Surgeon was in charge of a division, aided by Assistant Surgeons and Acting Assistant Surgeons, all subject to Surgeon McCaw as executive head. The hospital occupied a good location on a plateau outside of the city. It had its own water supply, five large ice-houses, Russian bath houses and sanitary provision. In addition to the wooden buildings 100 Sibley tents housed 800 to 1000 convalescents. A neighboring plantation was loaned to care for 100 to 200 milk cows and 300 to 400 goats which were used for meat. A bakery supplied 7,000 to 10,000 loaves of bread each day, one to a man. The grease from the souphouses was employed in the making of soap, the lye being smuggled through the blockade. The hospital was supported entirely by ration assignment, with no direct appropriation from the Confederate government. At the close of the War its records showed care of some 76,000 patients treated in Chimborazo Hospital, approximately 17,000 from wounds. Mortality was a fraction over 9 per cent. This is believed to be the largest military hospital to this date. Col. Hume compares it with the Justice Hospital Center at Toul, France in World War No. 1, where 67,866 patients were treated to the end of March 1919.

Over 60 general hospitals are noted in the various publications of the period, about ten others in the vicinity of Richmond. Winder Hospital, located here, covered 125 acres of land and consisted of six divisions. Sixteen acres of hospital garden were worked by convalescents. It is interesting to note that staff meetings were instituted at Winder Hospital to consult on cases and exchange medical experiences.

Hospitals in more distant centers operated under greater difficulties. Personal experiences in the Tennessee area have been detailed by Surgeon S. H. Stout. On transfer to the Hospital Service in 1861, Dr. Stout found the unit housed in a warehouse in Nashville, in which front windows and doors and one sky-light were the only means of ventilation. There were no accounts, no register, no histories and no diet records; 650 patients were lying on the floor or in bunks, many of them seriously ill. The hospital had previously been in the charge of the ladies of the Nashville Hospital Association, and patients were treated by civilian physicians whom they called. Hygienic conditions were deplorable. Only with difficulty was Dr. Stout here enabled to effect the military organization finally achieved, in which the ladies rendered valuable aid in preparing special diets for designated cases. Small wonder that the soldiers looked upon consignment to such military hospitals with universal dread.

Regimental *field hospitals* are described by Chisolm. Each regiment had two units, each 14 x 15 feet and 11 feet high with a 4½ foot surrounding wall and a *fly* which permitted two or more to be thrown together; eight or ten patients were cared for in each unit. Tents were scarce from the beginning of the war owing to lack of manufacture and the maintenance of strict blockade. As hostilities continued many were destroyed in quick moves to prevent their falling into the hands of the enemy. These regimental hospitals were used for transient cases only, all others being transferred to the general hospital. Oil cloth or painted canvas covered the floor. Bed sacks filled with straw were recommended as being better than heaped straw. Dr. Chisolm advises that the straw should be changed twice a week, but since straw was scarce in the Confederacy, notes that the sick often were compelled to lie on the ground, and the tent should therefore be moved once a week. The staff included one steward, one nurse and one cook, drawn from enlisted personnel of the regiment.

H. I. Bowditch in a contemporary publication described a visit to a field hospital:

"On the following morning after dressing many wounds, I accompanied Dr. H. to the rebel hospital, about four miles farther on the Warrenton Road, for the purpose of removing Capt. Kelton of the 21st Regiment, whose thigh had been amputated by Dr. Miller, the rebel surgeon. We found four of our soldiers there and about 75

wounded rebels lying on the hay in a very comfortable stone barn. I observed that the medicines and surgical appliances used there had Philadelphia labels. Had they been captured, stolen or smuggled? Our men expressed themselves gratified with the attention they had received from the rebel doctor: for which I could do no less than thank him. We then placed Capt. K. in the Ambulance and returned to our hospital."

There were in addition rest-houses conducted by civilians known as *wayside hospitals*. This project originated in Columbia, S.C., and was sponsored by the Young Ladies Hospital Association in 1861. The girls first busied themselves making homespun shirts, knitting socks and rolling bandages. As the war continued the numbers of sick soldiers returning home to convalesce began to be considerable. Often they were delayed hours between trains with no accommodations for their comfort. A clergyman of Columbia became interested and suggested to the young ladies that they establish a room in the depot providing refreshments for the men. The project was undertaken with enthusiasm, soon growing to enormous proportions and spreading to other Southern cities, and older women, physicians and older men were called upon to help. Facilities were offered for bathing, dressing of wounds, meals and a night's lodging. Established in March, 1862 it continued until the end of the war, serving many thousands of men. So much for canteen service in that day.

Besides the Army hospitals and wayside hospitals a number of nursing and convalescent homes were established by private means in residences, particularly in the early days of the war when the need was greatest. Chisolm says "Women have established hospitals and by private means and their individual efforts have successfully conducted large establishments." One such was the Roberson Hospital maintained by Miss Sally Tompkins of Richmond, opened ten days after the Battle of Manasses and continuing service until July 13, 1865. Here over 1400 Confederate soldiers received medical care. Owing to the great number of hospitals maintained at personal expense without military supervision, a law was passed demanding their discontinuance and ruling that no hospital would be allowed except it be under the care of a commissioned officer of a rank of Captain, that being the rank of an Assistant Surgeon. Miss Sally protested to the Secretary of War who said that only the President of the Confederacy could help her. She then went to President Davis with her hospital record. This showed the death-rate in her institution to be small, and the percentage of soldiers returned to service large, in fact better than that shown by any other hospital in Richmond. In order to comply with the law, President Davis commissioned Miss Sally Tompkins as a Captain. She accepted the Commission but refused to accept pay, continuing to operate her hospital at her own expense.

Transportation of wounded was difficult and often the cause of death. Hand-carried litters, resembling a folding canvas cot, were easily broken, heavy to carry and were often destroyed. Ambulances were four-wheeled, spring wagons, with a box-body of 3½ x 7½ ft. Two could be carried lengthwise on stuffed seats; or a drop could provide a continuous bed. The ambulance carried two men lying or 10 to 12 sitting. Horse-litters were also used, being 3 x 16 feet and folding in the middle. Two of these were joined and were on either side of a horse's back, like panniers. The mortality from transportation alone, though undetermined, must have been large.

Men detailed from personnel acted as nurses in regimental and in general hospitals. Local women often gave volunteer help in the general hospitals and opened their homes for soldiers needing convalescent care, and for cases of unusual severity. One such was Mrs. Ella K. Newsom, sometimes called the Florence Nightingale of the Southern army. Mrs. Newsom, quite wealthy in her own right, was the widow of a physician. Taking her servants with her, she served in the hospitals of Bowling Green, Nashville, Memphis, Chattanooga, Corinth, Marietta and Atlanta. She lived in the hospitals and ate the same food as that given the patients. She notes her breakfast during the last years of the war as being composed of rye coffee sweetened with sorghum, hard tack and sometimes a slice of baker's bread. Another woman who gave devoted service was Miss Kate Cummings of Mobile who describes her experiences in her book, "Journal of Hospital Life in the Confederate Army of Tennessee from the Battle of Shiloh to the end of the War: with sketches of life and character, and brief notices of current events during that period."

The care of sick and wounded *prisoners* was a matter of much controversy during and after the war. Contemporary accounts lead one to believe that conditions in the North and South were equally bad. Certain it is that the bitter feeling of the times colored all reports and accusations. In May of 1861, the Confederate Government passed a law providing for exchange of prisoners, but the exchange was not carried out until July of 1862 and then very incompletely; it was practically suspended in 1864. As a result of the meager sources of available supplies the Confederate Government was severely overtaxed by provision for thousands of prisoners. Regulations ordered that prisoners be afforded the same care as enlisted men, but where supplies were so inadequate, it is probable and understandable that preference may have been given the fighting forces. Conditions in Andersonville Prison were the subject of widespread scandal, and in 1864 Dr. Joseph Jones asked and was granted permission to visit Camp Sumter. Lack of proper police and hygienic facilities had caused the death of 9,479

persons, nearly one-third of the entire number of prisoners. Five thousand were seriously ill and deaths exceeded one hundred per day. Only one medical officer was available to care for over 2000 sick and wounded, the chief causes of death being scurvy, diarrhea and dysentery. Dr. Jones reported the urgent need of an official investigation. The full report in manuscript, of conditions as found by Dr. Jones, is to be seen in the Rudolph Matas Medical Library. It is illustrated by water color sketches of many cases, by the author. This manuscript alone contains a wealth of information as to diseases of the war years, under conditions of malnutrition, crowding and serious infection. Dr. J. S. Hopkins was immediately ordered by the Confederate Government to this assignment. His report confirmed conditions as previously detailed by Dr. Jones, and recommended "the immediate removal from the prison of not less than 15,000 prisoners; detail on parole of a sufficient number of prisoners to cultivate the necessary supply of vegetables . . . ; the immediate erection of barracks to shelter the prisoners; to furnish the necessary quantity of water, have wells dug to supply the deficiency; divide the prisoners into squads, place each squad under the charge of a sergeant, furnish the necessary quantity of soap, and hold each sergeant responsible for the personal cleanliness of his squad; furnish the prisoners with clothing at the expense of the Confederate Government, and if the government be unable to do so, candidly admit its inability and call upon the Federal government to furnish them; inspect the bake-house and baking daily and cover the open culvert which ran through the prison camp." Dr. Hopkins recommended that the hospital tents be floored with planks; that sanitary facilities be increased and often cleaned; that the diet be augmented with vegetables and beef soup; that medical visits be increased to two each day; and that a medical officer be assigned solely to the duty of inspecting the hospital and bakery, reporting conditions directly to headquarters. The state of sanitation which existed previously may be imagined from the enumeration of the recommendations.

As an example of similar conditions existing in the North, it is said that Rock Island prison, which was established in December, 1863 and functioned only a little more than a year, held 2,484 Confederate prisoners, of whom 1,922 died—only about twenty per cent surviving. The Federal prison at Camp Douglas in February, 1863, showed the highest mortality of any prison, North or South, during the War, ten per cent dying within one month.

The U. S. Sanitary Commission was a Northern group organized independent of Government authority, to investigate and aid in improvement of health conditions of the soldiers. It was composed of some of the leading physicians of the day. While most of the activities of the Commission were directed toward Federal hospitals, nursing and am-

bulance service, and sanitation in camps, in the latter years of the War investigation of Confederate prison camps and hospitals was undertaken in some cases. It is difficult in the mass of contradictory evidence to separate truth from prejudice, and proof of intentional neglect from inability to offer amelioration from want of personnel, food and medical supplies.

Dr. Henry Wirz, Commandant of the Confederate States Military Hospital at Andersonville from February 1864 until the end of the War, although held by Confederate authorities entirely innocent of conditions which existed before he assumed command and which he was bending every effort to correct, was courtmartialed before a Federal Court of investigation, immediately after the close of the War and executed on November 6, 1865.

Since medicines and all *medical supplies* were declared contraband early in 1861, the only means of securing them from outside the limits of the Confederacy were by capture of Federal supplies, or by blockade running. In general, the order of importance, in bringing in contraband materials was first, arms and ammunition; second, clothing, footwear and hats; and third, the drugs and chemicals most needed, such as chloroform, quinine, opium and morphine. Since medical supplies stood third on the list of precedence, it early became of paramount importance to utilize the resources of the area for medical purposes. Surgeon F. R. Porcher was detailed by the Surgeon-General to investigate indigenous plants and herbs, and their potential therapeutic use. His book, "Resources of the Southern Fields and Forests, Medical, Economic and Agricultural, being also a medical Botany of the Confederate States with Practical Information on the useful Properties of the Trees, Plants and Shrubs," published in 1863, reports his findings and furnishes us with an amazing wealth of medico-botanical information. The same year a small pamphlet issued by the Surgeon-General's Office, titled "Standard Supply Table of the Indigenous Remedies for Field Service and the Sick in General Hospitals" presented in tabular form the best of this information. Five medical laboratories were established in which the plants and herbs were prepared for medicinal use. The Supply Table gives botanical and common names of plants, medical properties, dose, form of issue and estimated quantity needed for a given number of patients for a specified period. The cultivation of castor beans and peanuts was encouraged for the production of oil, but an effort to grow poppies for opium in Georgia and North Carolina was unsuccessful.

Official communications from the Surgeon-General's Office urged the use of herb preparations and advised the detail of enlisted personnel in the collection of the necessary plants. Frequent orders recommended the utilization of substitutes for particular disease condition. In May, 1863, an infusion of the common elder is advised "as a means of expell-

ing maggots infesting wounds," and in December, 1863, the following formula for a compound tincture of indigenous barks is announced as "a tonic and febrifuge and as far as practicable for quinine."

> Dried dogwood bark, 30 parts; dried poplar bark, 30 parts; dried willow bark, 40 parts; whiskey, 45 degrees' strength; two pounds of the mixed bark to one gallon of whiskey. Macerate 14 days. Dose for tonic and febrifuge purposes, one ounce three times a day.

Whiskey was supplied by moonshiners, and rum was manufactured in New Orleans from molasses. Books were more scarce than instruments. Sometimes the surgeons bought books from the homes of doctors in the locality of their service. Dr. D. J. Roberts bought a copy of Erichsen's *Surgery* from a Dr. Johnson in the vicinity of Clinton, La., for an ounce of sulphate of quinine.

Quinine was one of the most sorely needed drugs. An article in 1864 reports the external application of oil of turpentine as a substitute for quinine in intermittent fever. One suspects that sometimes the remedy was worse than the disease. The story is told of a soldier in the Vicksburg campaign detailed to procure quinine, calomel and opium by smuggling them through the lines. He crossed the Mississippi at Greenville, and proceeded to Canton where he obtained the supplies and returned to the river only to find it bank-full and a gun-boat near. He at length found an old dug-out, which was damaged in one end. He loaded the rear end heavily so that the front would ride above the water. After nightfall he loaded his medicines on the pirogue and swam the River, pushing the dugout ahead of him. Another story tells of the use of a hospital wagon, bearing a yellow small-pox flag, as a blockade runner. Women are said to have smuggled drugs through the lines under their voluminous skirts.

Various preparations were recommended for their analgesic virtue. Tincture of aconite, or monkshood, was used as an external anesthetic in frontal neuralgia or local pain. Poppy heads, nightshade and stramonium were also recommended to relieve pain. Phytolacca or poke-berry was often combined with sarsaparilla root, sassafras, alder or prickly ash and was said to possess analgesic properties.

As a purgative, decoctions of black-root, may-apple, white walnut bark or peach-tree leaves were advised. Onions and garlic were used in poultices, as were poke-root, celery, pepper, parsley and sage. Onions were also employed as an antiscorbutic.

In pneumonia, pleurisy and so-called catarrhal fever, the patient was treated with local applications of mustard seed or leaves, stramonium leaves, hickory leaves or pepper, alternating with butterfly root and sanguinaria until a state of nausea was produced. Lobelia was considered a reliable emetic in cough, croup and asthma.

For dysentery, a tea of red-root or sampson snake-root was prescribed, or if preferred, a pill of willow, charcoal and castor oil every 1 to 2 hours. For intermittent fever, warm bone-set tea was used to produce vomiting. This could also be prescribed for remittent fever preceded by good doses of mandrake tea, or white ash-root, prickly ash-root, Virginia snake-root or yellow-root. Calomel was seldom available at any price.

Wounds were treated with a cold water dressing with a decoction of red oak bark as a disinfectant. A weak solution of bicarbonate of soda was sometimes used. For severely infected wounds, rasped buckthorne was recommended. These were the days before Lister and his doctrine of antiseptic procedure, before the bacteriological observations of Pasteur. Inflammation and "laudable pus" were deemed essential in wound healing. The use of turpentine in fresh or suppurating wounds was thought to hasten repair, and charred cotton was considered an excellent dressing for ulcers and suppuration. It is interesting to note, however, that Dr. Joseph Jones advised the use of iodine on cuts and abrasions; and that in 1863 a group of Confederate surgeons noted the action of maggots in the eradication of infection.

Two surgical devices emanating from the Medical Service of the Confederate States Army deserve mention. Dr. Julian J. Chisolm invented a chloroform inhaler, fitting into the nostrils and designed to conserve chloroform; and Dr. J. B. Bean, a dentist from Atlanta, devised an interdental splint for use in fracture of maxillary bones. This splint was said to be so successful that Dr. Bean was given special facilities for its use in a number of cases referred to him.

Medical and surgical equipment in military service was of the simplest. Dr. Joseph Jones was said to be the only medical officer in the Confederate service to use a clinical thermometer. First-aid equipment on the battlefield consisted of a pocket case of instruments, plasters, bandages, and a few simple splints.

All authorities agree that in this as in other wars, mortality and morbidity from disease, far exceeded that from wounds. Brown believes that diseases consequent to measles cost the Confederate army the lives of more men and a greater amount of invalidism than all other causes combined. Sequellae were often diminished, by sending men home on furlough to recuperate. Diarrhea was second to measles, resulting from improper food and its poor preparation, as well as from infection. One instance is noted where a "feed of green corn from the fields" stopped an epidemic of diarrhea. In comparing the lists of debilitating conditions of the Confederate soldiers with those noted by Hurst (1940) as Medical Diseases of War, only typhoid, malaria and digestive disorders are still recorded in the *war* category, and for the first two we now have prophylactic immunization or specific therapy. Medical ad-

vances since that time have in most cases changed not only the nomenclature but our whole concept of many diseases.

It is notable that mortality from disease in armies, as a result of crowding and poor sanitation, is much higher than in civil life. For the year ending June 1, 1860, just preceding the War, the U. S. Census shows a mortality rate of 6.3 per 1,000 in males between the ages of 15 and 50. Incomplete records might bring this to 10 per 1,000. In the first year of the war this was raised to 48.7 and in the second year to 65.2 per 1,000.

The maintenance of *health in civil life* was an entirely distinct, but none the less important problem of the war. Two factors were involved, the scarcity of foods and medicines and their excessive and ever-rising cost. Every effort was made to supply the needs of the Army first, and as a result all sort of expedients were pressed into use at home. Substitutes for coffee included parched okra seeds, rye, cotton seeds, sweet potatoes, corn and peanuts. Real coffee when available sold for twelve dollars per pound, in Confederate currency. For tea, red-root, holly leaves, blackberry, raspberry and rose leaves and sassafras were used. Vinegar was made from persimmons. Candles were moulded from tallow, beeswax and sometimes mutton suet and wax. Dyes were prepared from herbs, and spinning and weaving was done on the plantations. Hats were braided from palmetto and corn shucks. Shoe blacking was compounded from Pride of India berries boiled with water, soot and a little mutton suet. Sumac berries were the source of ink. Rags were saved for paper, old iron for foundries. Salt was extracted from the earth under the floors of meat houses. Instructions are to be found in Porchers' Resources for the manufacture of glue, native dyes, ink, soap and the extraction of turpentine; directions for waterproofing material; substitutes for tobacco; and plants used for the preparation and tanning of leather. Food prices were excessive: eleven dollars for a pound of bacon, ten dollars for a small dish of green corn and ten dollars for a watermelon. When soldiers convalescing at home were threatened with scurvy for want of green food, one Southern matron bargained for a dish of vegetables daily for 14 days, at a cost of fourteen dollars. On delivery the "dish of vegetables" contained two beets and four onions.

Various *home remedies* were used in the absence of medicines; a balsam of cucumber for burns; mutton suet and sweet gum as salve for sores; blackberry cordial for diarrhea; horse mint and broomsedge tea for colds; goose grease and sorghum or honey with turpentine and brown sugar for croup; red oak bark and alum for rash; fennel seed for paregoric; tea of black haw, squaw weed or partridge berries for menstrual disorders; and beef's foot oil, hog's foot oil, or lard heated with syrup as a laxative for children.

When available, other medicines were so expensive as to be almost prohibitive. Quinine was listed at twenty dollars an ounce; castor oil at twenty dollars per gallon. In the winter of 1864-65, quinine pills cost one dollar each, and other pills, five dollars per dozen. Morphine was ten dollars per drachm and chloroform was beyond price. Even containers for medicines were scarce. Corks were cut from old life preservers, or made from corncobs. The manufacture of glass bottles was attempted but was never completely successful. Deprivations indicated by the use of such substitutes discourage criticism over those which are our lot today.

Time does not allow a study of health conditions in the general area during the war years. Such an investigation might well serve as another and entirely distinct project. Prolonged controversy raged in the post-war years, over the health status of New Orleans during the period of its occupation by the Union forces, and the question of whether the absence of severe yellow fever epidemics during that period might be attributable to the strict blockade maintained. Health statistics of individual Southern cities and states would doubtless furnish interesting data as to epidemiology and mortality as they maintained under the conditions which then existed.

Many surgeons were particularly outstanding and are worthy of more extensive study. Surgeon-General SAMUEL PRESTON MOORE was an able administrator. He served as President of the Association of Army and Navy Surgeons of the Confederate States from its organization in Richmond in 1863. He was responsible for the publication of the Confederate States Medical and Surgical Journal and the Manual of Military Surgery both of which were sent to all Confederate Surgeons. Dr. Moore remained in Richmond after the War and was elected first President of the Association of Medical and Surgical Officers of the Army and Navy of the Confederate States in Atlanta, in 1874. He died on May 31, 1889. He is described as of medium height, being very erect. He was studious but possessed a genial and keen wit. Although a strict disciplinarian, he was appreciative of good service and commanded the respect and admiration of all who knew him.

DR. HUNTER MCGUIRE was first active in the Southern cause, in being the leading spirit in causing some three hundred southern medical students to withdraw from northern medical schools in 1860. He was born in Winchester, Virginia in 1835. He served as Medical Director of the Shenandoah and later as Brigade-Surgeon of Gen. Stonewall Jackson's command. Following General Jackson's death he became Medical Director of the Army of Northern Virginia and later in the same capacity for the Army of the Valley of Virginia. He was responsible for the organization of the Reserve Corps Hospital of the Confederacy and of the Ambulance Corps. After the close of the War, he became

head of the Department of Surgery of the Medical College of Virginia, continuing in this position until 1878; in 1880 he became Professor Emeritus. He was President of the American Medical Association in 1892. He died on September 19, 1900.

DR. JAMES B. MCCAW was born and received his early education in Richmond, but graduated in medicine at the University of New York in 1844, being a pupil of Dr. Valentine Mott. He was founder and charter member of the Medical Society of Virginia. At the outbreak of war, he was made Surgeon-in-charge and Commandant of the Chimborazo Hospital in Richmond, where he proved himself an able executive under formidable conditions. In the post-war years he served successively as Professor of Chemistry, Professor of the Practice of Medicine and as Dean of the Medical College of Virginia. He died in Richmond on August 13, 1906.

DR. A. J. FOARD was born in Milledgeville, Georgia and graduated at Jefferson Medical College. He served nine years as Assistant Surgeon-General of the U. S. Army, resigning at the outbreak of the War to enlist in the Confederacy. He organized the Medical service of General Bragg's Army and served in the same area throughout the War. Later he settled in Columbus, Georgia. In 1867 he was elected to the chair of Anatomy in Washington University in Baltimore. He died in 1868, at the early age of 39 years.

DR. JULIAN J. CHISOLM was born in Charleston and studied medicine at the Medical College of the State of South Carolina after which he spent some years abroad, returning to become Professor of Surgery at his alma mater. He is best known as the author of *Manual of Military Surgery,* outstanding in its day and specialty. Returning to private practice in Charleston after the War, he removed in 1869 to Baltimore where he became Professor of Operative Surgery, and Clinical Professor of the Diseases of the Eye and Ear at the University of Maryland. From 1873, he confined his practice to Ophthalmology and Otology, founding the Presbyterian Eye, Ear and Throat Hospital in Baltimore in 1877. Ill health forced him to retire in 1894, and he died in Virginia November 2, 1903.

DR. JOSEPH JONES was born in Georgia in 1833. He received his Bachelor's degree from the University of South Carolina, his Master's degree from Princeton College, and graduated in medicine from the University of Pennsylvania in 1855. He taught successively at the Savannah Medical College, the University of Georgia and the Medical College of Georgia until the opening of the War. He is particularly noted for his work on Diseases of the Southern States. His investigation relative to hospital gangrene in Andersonville Prison evidences painstaking and untiring medical observation. Following the War he held the chair of Chemistry and Clinical Medicine in the University of Louisiana,

now Tulane University, and as President of the Louisiana State Board of Health succeeded in establishing quarantine in Louisiana as an exercise of police right. He was an indefatigable student and a prolific writer. He died in 1896.

Dr. Moritz Schuppert, a graduate of the University of Marburg, came to New Orleans in the early fifties. He was a prolific writer, and in 1861, he published a pamphlet of some 47 pages on gunshot wounds, which he states specifically was written for and dedicated to the Surgeons of the Confederate States Army. It is interesting to note that Dr. Schuppert was the first in this area to operate under full Listerian procedure.

Civilians lent their aid to the cause of the Confederacy in every conceivable manner. The part of the women in hospital nursing of sick and wounded soldiers has been mentioned. A word also should be said of Mrs. Felicia Grundy Porter, President of the *Woman's Relief Society* of the Confederate States. This Association was responsible for raising the money and encouraging the manufacture of many thousand artificial limbs in those days of wholesale amputation.

The author is not a physician and no attempt has been made to evaluate therapeutic methods, which were doubtless those current in that day. Rather, the problem has been approached from the standpoint of a librarian, and any merit which this study may have, will be in the indication of further fields to conquer rather than in any pretense to thoroughness. The belief that little on a subject has appeared in print, is to the reference worker as the proverbial gadfly, and so it has proved in this case. The material and bibliography presented may be considered as suggestive only, and if thereby further study is encouraged in the history of medicine in the South and in the Confederacy, this fact and the absorbing interest which the work has afforded, will have proved the laborer worthy of his hire.

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FORMAL MEDICAL EDUCATION IN NEW ORLEANS, 1834-*

By HAROLD CUMMINS

THE STORY OF FORMAL MEDICAL EDUCATION in New Orleans opens in 1834, with the founding of the Medical College of Louisiana. Let us not try to follow all the chapters of that story, nor even read events in order, but instead pass back and forth in time while reconstructing a few features of the locale and early history of the first medical school to be established in the whole Southwest.

Thanks to the industry of others, including Chaillé,[1,2] Fossier,[3,4] Mason,[5] and Matas, there have been assembled systematic accounts of medical education in this city and of the history of The Charity Hospital of Louisiana. By way of present orientation, therefore, only a line of mileposts is needed.

It will be well, first, to glance at present-day undergraduate medical education in New Orleans as a frame of reference for comparison. New Orleans domiciles two schools of medicine, divisions of Louisiana State University and of Tulane University. Their respective enrollments during the last session were 338 and 483; the two faculties, counting all ranks and teaching capacities, include respectively 204 and 255 members.[3] Description of the requirements for admission, promotion and graduation, of the curricula, of the methods of teaching, and of physical facilities would be superfluous. It goes without saying that the standards conform to those which generally prevail in schools of medicine. Think now of the environment of these schools. Of first importance is the material available to them in teaching. The Charity Hospital, a state-supported institution, provides a rich source of clinical material; there are also several smaller hospitals available for teaching. Beds for general cases in the Charity number nearly 2400, and the tuberculosis units have an additional 495; admissions in the last year of report amounted to approximately 58,000 and there were about 6000 births.[4] The outpatient services are extensive. New Orleans calls for no special description; it lies before us—a cosmopolitan port city of nearly a half million population.

The School of Medicine of Tulane University is the continuation of the Medical College of Louisiana. When the University of Louisiana

* Presented at the 44th annual meeting of the Medical Library Association, New Orleans, May 7-9, 1942.

was organized in 1847 the Medical College of Louisiana was incorporated as its Medical Department, and with the formation of Tulane University in 1884 the University of Louisiana was merged. Through more than a century instruction has been interrupted only once; from 1863 through 1865 the doors were closed "for, during the three intervening years all of our students and all of their teachers, not too old for service, were Confederate soldiers."[2] The younger of the two present schools, that of Louisiana State University, was provided for by Legislative Act in 1877, though it was not until December, 1930, that plans for its establishment were announced. The first students were registered in the fall of 1931. There have been in addition two short-lived schools: The New Orleans School of Medicine (1856-1870), and Flint Medical College of New Orleans University, for colored (1889-1911).

The aims and progress of a medical school are influenced by current trends in education, and in some measure also by qualities of the community in which it is located. The School of Medicine of Louisiana State University, planned and put into operation so recently, was organized according to the model of current medical education, and in the setting of present-day New Orleans. While the two schools now march at the same pace, the Medical College of Louisiana was formed at a time when both standards and methods in medical education were quite different from those of today.

And what of New Orleans in 1834? It was a city of about 58,000 souls, a city that since its founding, more than a hundred years earlier, had been harassed by disease (malaria, yellow fever, smallpox, cholera), flood, fire and hurricanes. Still, it had survived and grown. The period in which the school began was marked by great commercial development and civic advance. Indeed, it was predicted by Thomas Jefferson at the time of the Louisiana Purchase (1803) that New Orleans would become the greatest commercial city in the world. He pointed out that it is the natural port of the Mississippi Valley, which he thought would become "the seat of a great and populous empire, and that all the varied products of that valley would find their way to New Orleans by a thousand streams; while to the south lay Mexico, Cuba, and the tropics."—"From 1803 to 1840 the prediction was in a fair way of being realized."[8] Jefferson, however, did not reckon with the development of transportation by railroad and over the Great Lakes, nor could he have foreseen that the War Between the States was to undo the progress of many years. Be that as it may, the early decades of the nineteenth century were marked by spectacular expansion of New Orleans, both in population and commercial activity.

New Orleans was founded in 1718. To understand its people at the time of founding of the Medical College, one must trace the history

from the beginning. Iberville had been commissioned in 1698, by Louis XIV, to conduct an expedition to this section. He was charged with the establishment of a colony and with the building of forts for the protection of the settlers from attack by Indians. Those entering the section during early colonial times were chiefly French, but a considerable number of Spaniards came into it after Spain took possession in 1769. In 1800 Old Louisiana was ceded to France, and three years later the United States obtained it by purchase. There followed a large-scale immigration from many States and from abroad, principally from France, Germany, Italy and the British Isles. Negroes were brought into Louisiana from early times, and their presence added another facet to the heterogeneous population.

The first medical men to reach the colony were the army surgeons who accompanied Iberville, and practitioners later came from France and the French West Indies. The troops of General O'Reilly, who in 1769 took possession of Louisiana in the name of Spain, had their army surgeons, and soon other Spanish physicians located in the colony. The rapid immigration after 1803 attracted medical men from other States, and from abroad as well. Naturally enough, then, the physicians of the colonial and early post-colonial period were of the same complex national origins as the general population. The influence of European medical training was perpetuated, many residents of Old Louisiana sending their sons abroad for study. Later, some Louisianians attended medical schools in the eastern States, and a comment by Devron[9] in this connection throws an interesting sidelight on the strongly Latin composition of the people. Devron commented that ". . . some of the sons of Louisiana attended the schools of the East *to acquire the English language* (my italics), and while there, obtained their medical education." Perhaps more striking illustration of the same point is provided by the discussion following announcement of the formation of the College, much of it in the form of violent criticisms of the project, emanating at least largely from the Latin element of the profession. Editorials and letters to the press indicated a feeling that lectures might well be delivered both in English and French. The plan, however, was to conduct the teaching in English, and it is recorded that one distinguished French physician declined the offer of a professorship, on the ground that he was insufficiently conversant with the English language.

Charity Hospital, since its inception in 1736, had grown with the community. In 1833 a building designed to accommodate 540 patients was completed on the site now occupied by magnificent recent structures. Its erection, in a time of great prosperity and growth of New Orleans, coincided with the formation of the first medical school. Clinical instruction was assured an abundance of material.

Abraham Flexner[10] has emphasized that in the New World "doctors

were needed before there was any way of educating them," as a result of "an unprecedentedly rapid expansion of population over an enormous territory." Such expansion is illustrated by the influx of people into the Southwest, including Louisiana and the City of New Orleans. Schools elsewhere had been founded in fulfilment of like need, beginning in 1765 with the first medical school, the Medical Department of the University of Pennsylvania. Then in 1768 King's College (predecessor of Columbia) was established; Harvard followed in 1782, and Dartmouth was next in 1798 (New Hampshire Medical Institute). Four regular medical schools were established in the next decade, and six more between 1819 and 1826, with three additions between 1829 and 1834. It was only natural that the relative isolation of the Southwest and its continuously increasing population soon would have called into being some medical school, and it happened that circumstances were such that the school was the Medical College of Louisiana, fifteenth in this list.

The first public announcement of the Medical College of Louisiana, its prospectus, was published in the *Bee* (September 29, 1834) in both English and French. A number of arguments were marshalled by the founders to show why New Orleans justified its selection for the location of the school. Calling attention to the sectional need of a medical school, the prospectus catalogued a dozen items by which New Orleans was considered particularly fit for its location. The founders stressed that "to the student of Medicine in the Southwest it will recommend itself by this unanswerable reason for a preference over any similar institution at a distance; it will enable him to study diseases and their treatment in the climate in which he intends to practice." That subject was treated at greater length in one of the first lectures[11] delivered in the infant school: "Introductory lecture on the climate and salubrity of New Orleans and its suitability for a medical school," by Edward H. Barton, Professor of materia medica, therapeutics and hygiene (later, Professor of the institutes and practice of medicine):

> "Let us test our situation by dwelling for a few moments on some of the cardinal principles of climate, upon which all depends for its favorable or unfavorable influence upon health, viz. temperature, moisture, winds, and latitude, we will then see its effects upon children and longevity, and then its influence in the production of disease and relative mortality, and conclude by an application of it to the peculiar appropriateness of this position for a medical school." There is a *"necessity* for the establishment of a medical school, to teach what these peculiarities are; to shew the rising medical students of the country the course of disease and of treatment, to direct their observation and reading so as soonest to make them acquainted with these peculiarities; for this, there is no substitute. . . . Southern practitioners *must* be taught in the south; if they

> do not receive their *educations* here, they will have to learn from a severe *experience,* which might have been saved them. . . . If these remarks are true with regard to a southern school, they are still more imperative with regard to its location. . . . In what part of the United States can be found better opportunities or more advantages to study practical medicine and practical anatomy, than is to be found in the Charity Hospital? Without these, and it requires a large sea port town to furnish them, you only teach theoretical medicine. . . . There is not and cannot be any situation in the United States similar to it, in relation to the study of tropical or tropicoid diseases."

The prime movers in the making of the Medical College were three young men, none over twenty-six years of age. One was Thomas Hunt, a South Carolinian who studied in Paris for a year and a half after graduating in medicine at Pennsylvania. Another was from Vermont, Warren Stone, a graduate in 1831 of the Medical School at Pittsfield, Massachusetts. The third was John Harrison, of Washington, D.C., who graduated from the University of Maryland in 1831. How these three men met and laid their plans, and how they carried through in the face of bitter local opposition is too long a story to be recounted here. Suffice it to say, they succeeded.

In the early eighteen hundreds there was active interest in reform of medical education; it may be of interest to measure the stature of the New Orleans College of Medicine against contemporary advanced thought. The creation of medical schools was in itself an evidence of protest against inefficiencies of the apprentice system, though indeed some schools were organized with motives of private gain rather than with an unselfish desire to effect improvements. In a series of essays,[12] characterized by Garrison as "the most important contributions ever made to the subject in this country," Daniel Drake laid bare some of the more glaring faults of medical education in that day.

> "In most of our schools," he wrote, "the number of professors is too small. Some there are, or have been, which carry on all their operations, and graduate their pupils with only four. Several have but five, and six are regarded as a maximum, which *need* never be exceeded. In Europe, however, the number is much greater; and in this respect we have unwisely departed from her example. . . . For myself, I am convinced, that every medical school *ought* to have eight professors; and that with less than six, it should, in the phrase of Lord Bacon, 'be noted as defective.' "

He argued also for better standards of preliminary education, classification of medical students according to the advance of their studies, lengthening of the sessions to five or six months, and proper clinical training. "The subject of hospital practice," he insisted, "must not be passed over in silence. That it *might* be made a source of great improve-

ment to students, no one can deny; that it *is* such, no one, I believe, will venture to assert."

The Medical College opened with eleven students. Provision for their clinical instruction met Drake's requirement, as did the faculty number, seven. In other respects there remained much to be done before the conditions idealized by Drake were satisfied, but by that time new issues had arisen and new problems awaited solution. This school, like all others, was improved only gradually, and with the inevitable lag between the thought and realization.

Until 1867 the institution never had more than eight or ten teachers, and though their number was gradually increased thereafter, Chaillé wrote in 1901, when the faculty numbered forty-one, that "we need and must have more specialties taught and more teachers."

Until 1893, when the requirement was first enforced, students were entered without the presentation of educational credentials. Though the requirement was increased in 1898, Chaillé, as Dean, was still pleading in 1901 for a more substantial standard. He pointed out that a bachelor's degree from any college was accepted for admission, "yet these degrees from some colleges fail to indicate as good an education as does the certificate of graduation from some high schools." Furthermore, he complained that the high school certificates issued by some superintendents were "valuable solely as illustrations of the extreme amiability and excessive elasticity of conscience of some of these State officials." His only consolation was that the standard then in effect was "a decided improvement over the past."

Attendance on only two annual sessions was required from 1834 to 1893. The sessions were of four months' duration until 1879, when the period was lengthened, and from 1893 the sessions extended over six months. For students entering medical study after January 1, 1899, attendance through four annual sessions was required. Through a long interval an additional year of apprenticeship in a doctor's office was nominally demanded for graduation, but neither this requirement nor full attendance throughout the college sessions was strictly enforced. Chaillé offered this personal illustration of the laxity in such matters which prevailed in his student years: "I was graduated in 1853, only seventeen months after opening a medical book for the first time, and to prove how very little was then required, I was graduated, as no doubt many others were, by the unanimous vote and with the congratulations of the Faculty and no question was ever asked as to how long I had been a student of medicine."

Examinations, until 1881, were given once annually, and then only to candidates for graduation. Until 1866 every candidate was examined orally on all subjects on the same day, the whole being covered in about

an hour and a half. These examinations were the sole basis of determining graduation, there being no graded reports on laboratory or clinical exercises. From 1881 onward, examinations were gradually made more exacting, and the students' records in individual studies were finally entered systematically, beginning with 1898.

The college erected its first building in 1843, classes having been conducted previously in the residences of the professors, in a Royal Street hall, or in Charity Hospital. The spirit of the early school was ardent, and the lack of quarters did not dampen it, as shown by the remarks of E. H. Barton, in a lecture[12] delivered at the opening of the third session of the college, in 1837:

> "It has fallen to my province to open our third course of Lectures, and I do so in presenting to you in the name of colleagues, the most cordial welcome. Though no house is built expressly for the accommodation of the class, all the advantages the most magnificent edifice dedicated to science could have afforded, are at your bidding; . . . we stand before you as the humble, but earnest labourers in the cause of our science, with the determination to raise a name for ourselves, which shall be estimated by our success in teaching the science as it is—in shewing you its important practical and useful parts—in demonstrating disease at the bed side and how to cure it; these require not splendid halls . . . — they require what I trust and believe you will be furnished by my colleagues—proper principles and the mode of applying them."

As for the library in the early years of the college, Chaillé recorded in 1901 that "The close of the war found our college in 1865 with many old books but without catalogue or index or house-room for them, nor could a proper room be provided until our new building was completed in 1893. For several years thereafter the attention and funds of the Faculty were more urgently needed for other improvements than the establishment of a library, but this was done in 1896 and it has since been annually improved."

A medical laboratory, except for that devoted to dissection, was non-existent until 1889, when a microscopical laboratory was established. Even in this, a course of study was not required until 1893. Also in 1893, laboratories for chemistry and for operative surgery were introduced, and practical work therein was made compulsory.

In the meantime the New Orleans School of Medicine had been organized, chartered in May and opened in November, 1856. The new school, starting with a faculty of ten members, exceeded the standards of its neighbor in several important respects, and it may be readily appreciated that the example was beneficial. Separate chairs of Clinical Medicine and of Diseases of Women and Children were inaugurated, more effective methods of clinical instruction were introduced, a dispensary was opened, peculiarities of disease in the negro were recog-

nized and taught, and the sessions were extended to five months. The character of some of these improvements may be best described in the words of the founders of the new school:[13]

> "There is no longer cause for the most timid to doubt that New Orleans possesses ample material for the liberal support of two Medical Schools, and that this young institution is at once placed on a firm basis. The Faculty contemplate with especial pride the happy results of their labors to improve the prevalent system of medical teaching. They felt assured, from personal experience, that the prevalent plan of delivering all the lectures within sixteen weeks, thus forcing the student to attendance on six or seven lectures daily, without reference to his other manifold duties, was in direct violation of all laws of health, whether physical or mental; they lengthened the term to five months, and they are not only assured of the great advantages peculiar to the innovation, but they have received the approval of the students themselves."

The Professor of Theory and Practice of Medicine, besides three lectures weekly, was to spend at least one hour daily at clinical instruction in the wards.

> "Each student is placed in charge of a patient, and it is his duty to keep a minute record of the case, from beginning to end. To assist him in this, printed blanks are furnished, containing necessary questions relative to the *origin, previous history, existing condition, diagnosis, treatment,* etc. A narrative or report is thus kept, and it is read aloud by the student when the Professor reaches his bed. Errors and omissions are then corrected, the Professor offers any remarks that are deemed appropriate, and the student finds himself at once learning *what to observe at the bedside of the sick man.* The Professor in this Chair . . . . having practiced extensively on the cotton plantations of the South before removing to New Orleans, he will endeavor to make his knowledge of the negro constitution, and his experience in the treatment of the diseases of that race, available to those students who expect to practice in the country."

In referring to the teaching of clinical medicine, and auscultation and percussion:

> "The plan adopted will be that which has been found so eminently successful in the hospitals of Paris. This is founded on the great truth: that observation in medicine, to be profitable, must be complete; that the exertions of the student will be of no avail unless the malady be watched during its whole course, the symptoms, as they arise, noted, and the effects of medicines carefully observed until the termination in recovery or death."

In reading the record of medical education in America, or in New Orleans, one can not fail to be impressed by the incommensurately small progress effected by prolonged and earnest efforts. Casting accounts of accomplishment in the Medical Department of Tulane University, in 1896, Chaillé[1] had this to say:

"While indulging in sanguine hopes for the future of medical education, experience proves that great progress is seldom attained except by slow and gradual steps, and that we should be content if, holding fast by all that has been gained, something more is year by year added. In such case, all interested in the medical department should now be well content, for nothing ever gained has been lost; something has been added annually to its educational resources; very notable progress has been made; the greater success of the present session has freed the responsible authorities from the anxieties, fears and trials of the last three years [panic of 1893], and on every hand the signs are now propitious for still greater progress, prosperity, usefulness and renown."

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NON-MEDICAL REFERENCE MATERIAL USEFUL TO THE MEDICAL REFERENCE LIBRARIAN*

By Robert J. Usher

I HAVE BEEN ASKED by your president, Miss Marshall, to suggest some reference material likely to be useful in a medical library. I realize this is a difficult assignment and that the suggestions I offer may not be universally applicable. Much will depend upon the peculiar demands of a particular locality. The outside interests, hobbies and avocations of physician users of the library may, perhaps, have to be met. There is the question of whether or not the medical library may legitimately be called upon to supply information to users on subjects which have little or nothing to do with medical subjects. There is also the question of whether or not service should be given to members of the physician's family.

I confess that I cannot speak authoritatively on the subject having never been a medical reference librarian, but I was for a number of years reference librarian of the John Crerar Library, one of the foremost reference libraries in America, and I know of the great variety of inquiries that often come unexpectedly from readers whose lives are largely devoted to scientific pursuits.

The kind of medical library I am thinking of in this discussion is one not like the John Crerar Library or, for example, medical departments of the University of Minnesota or the University of Michigan where, as I remember it, the medical librarian for general information would have simply to refer the reader to an adjacent university or general reference library. I am thinking rather of medical libraries such as those of the University of Texas or the Stanford University Medical Library which are quite widely separated from other book resources of the university.

If you are so located, what general reference material might you keep to good advantage? I assume that you would be in the fortunate position of being able to purchase such reference helps or that there might be question in your minds as to the wisdom of accepting such material as gifts or as exchanges. With your splendid system of exchanging material and with generous friends who are likely to be disposed to send you useful books, it should be possible for you to acquire a good many of the tools I shall suggest at small cost to yourselves.

* Presented at the 44th Annual Meeting of the Medical Library Association, New Orleans, May 7-9, 1942.

Perhaps we should begin with indexes to periodicals. You have your own developed to a high degree. Should you make shelf room for such non-medical periodical indexes as the *Reader's Guide,* the *International Index,* both published by the H. W. Wilson Company or the *Index to Periodicals* of the F. W. Faxon Company? All of these indexes will show a certain number of references on popular medicine and, of course, information on practically any other subject. I should say you would be wise to make a place for these indexes in your library, especially if they came to you gratuitously.

All of you I think will frequently use the *Periodicals Directory,* now in a third edition, published by the Bowker Company at $12.00. This useful work gives names of all principal periodicals, place where published and subscription price. The *Union List of Serials* showing serial holdings of leading American libraries, and to which most of you have contributed, is practically a necessity. The new edition is now being printed.

For information as to reference books in all fields the standard work, as you doubtless know, is Mudge's *Guide to Reference Books,* now in its sixth edition and in need of a seventh, for which there have been published two supplements which bring the work down to 1940. For more recent reference literature the pages of the Wilson Bulletin are very useful.

There is a work, *Special Library Resources,* one volume of which has been published and other volumes are in process. This work shows unusual source material in special libraries not generally well known. A criticism of this work is that it is somewhat *spotty* at present. Later volumes may help to fill gaps.

When in doubt about the purchase of Subscription Books (and what reference librarian is not asked whether this or that encyclopedia will be a desirable purchase and whether or not a sketch of grandfather's life should be published in this or that biographical work) always consult with confidence the American Library Association's *Subscription Books Bulletin,* $2.00 a year. Quote it rather than give your own opinion! It will save you embarrassment many times.

I always recommend abstracts in the form of periodicals. They provide at relatively low cost an immense amount of information which may be followed up in another library which has wider resources. So I recommend *Psychological Abstracts* for its field, especially useful to the psychiatrist. Similarly, I recommend *Social Science Abstracts* which ran from 1929 to 1932, *Biological Abstracts,* vol. 1, 1926 to date, now published in six sections, any of which may be subscribed for separately if one does not care for the complete work. *Botanical Abstracts,* 1918 to 1926 and *Abstracts of Bacteriology,* 1917 to 1925, were both absorbed by the larger work, *Biological Abstracts* above mentioned. *Physiological*

Abstracts, an English work, ran from 1916-1937 when it was united with *British Chemical Abstracts* to form *British Chemical and Physiological Abstracts.*

There is a useful work which costs nearly $300, the *Royal Society of London Catalogue of Scientific Papers 1800 to 1900,* in nineteen volumes, which is the prime source of information on the scattered writings of the scientists of the nineteenth century. Any library is fortunate if it has this set.

I assume you all get the *Index Catalog of Medical and Veterinary Zoology* published by the U. S. Bureau of Animal Industry. You may be less familiar with the *Annual Review of Biochemistry* of Stanford University, $5.00 a year, now in its eleventh volume which groups principal contributions for the year by subjects.

The *Technical Book Review Index,* $5.00 a year, published quarterly since 1917 well supplies reviews of many books within your field.

The subject of encyclopedias is bound to be of interest. For those in the English language the choice presently falls for larger works on the *Encyclopaedia Britannica* and the *Americana.* In a single volume work the *Columbia Encyclopedia* is invaluable. In encyclopedias in foreign languages (and I presume your need will vary according to locality) *Brockhaus Konversations-Lexikon* in German in 21 volumes was completed in 1935. *Larousse du XX^me^ Siècle,* Paris 1928-1933 in six volumes is recommended. The *Enciclopedia Italiana,* Rome, 1929-1934, in 24 volumes is a splendid work. Encyclopedias in other foreign languages may be found listed in Mudge's work.

A useful work in which to find record of a voluminous literature is the *Essay and General Literature Index,* published by the H. W. Wilson Company since 1900.

There is a fairly recent *List of Congresses,* national and international, Washington, 1938, from the U. S. Surgeon General's Office which is probably well known to you. For learned societies of Great Britain and Ireland the annual *Yearbook of Scientific and Learned Societies* remains standard. Some of you living nearer the tropics may feel the need of such a work for Latin America. It is available in *Severance's* compilation, published in 1940.

All who need information on various foundations and their fields should have at hand Seybold's work which appeared in a fourth issue in 1939.

I suggest to you also the desirability of acquiring for your libraries the publications of at least your own state Academy of Science. These publications, even now, contain many contributions by medical men and in an earlier day this was still more true.

You will probably have no place for newspapers but if good fortune brings you the *New York Times Index,* which has been published since

1913, make a place for it. It is a mine of information especially for recalling dates, and it is for many reference librarians a last resort for elusive facts.

I have refrained from mention of many psychological works. Hensie and Shazky's *Psychiatric Dictionary,* Oxford Press, 1940, $10.50, may be suggested as a useful manual in this field.

You will need to have at hand a good concordance of the *Bible.* Walker's, Macmillan 1941, serves admirably. You may not feel the need of much in the field of religion, but the Encyclopedia of Islam, London 1938 now completed contains many subjects of interest to the curious physician.

For primitive religion Frazer's *Golden Bough* in 12 volumes stands as a storehose of information. For myths Gayley's work still remains the classic as its title suggests.

Do you have occasional questions about government and politics? The *American Yearbook* serves well for our own country. Nothing is better for a world view than the annual *Statesman's Yearbook* and let me suggest of annuals, generally—do not buy *all* every year. Stagger your purchases where possible to make the budget go farther. The *World Almanac* you must have annually, but occasional purchases of such works as the *Canadian Almanac,* or the *Whitaker's Almanac of England* may suffice. There are a number of U. S. Census publications which you can probably obtain through your congressman, which will prove helpful, especially the general population volumes and those relating to vital statistics. The *Statistical Abstract* of the U.S. is so useful as to be almost a necessity. Another handy government publication is the *Official Congressional Directory* which sometimes appears more than once during the year.

For municipal statistics, names of officials, etc., the *Municipal Yearbook* is valuable. Most states publish something in the nature of a blue book—always convenient. Those who want information for all states will find it in the *Book of the States,* now in its third issue.

The *Social Work Year Book* is a useful manual for those who require information on welfare.

You will frequently need an educational directory. Let me suggest that here again the U. S. government publication, one of the bulletins of the U. S. Department of Education, will serve quite as well as one of the publishers' directories, not all of which are accurate. The *Encyclopedia of Educational Research* edited by Walter S. Monroe, in one volume, takes the place of the older outdated *Cyclopedia of Education.* A world wide educational directory is frequently an asset. *Minerva* has been the standard work in German. Competing with it is the Parisian publication *Index Generalis.* Both are just now inactive because of the war.

For the physician's children a *Handbook of Private Schools* is helpful and sometimes a *Directory of Summer Camps,* both of which are published by Porter Sargent of Boston.

In dictionaries of the English language the standard is the *New International Dictionary* (Webster's) not to be confused with certain inferior works which also bear the name of Webster such as the *Webster's Columbia Concise Dictionary* and *Webster's Encyclopedia Dictionary.* The *Standard Dictionary,* in two volumes, issued by Funk and Wagnalls is good but apparently has not been revised since 1913. The great *Oxford English Dictionary* is now available in a reissue in twelve volumes and a supplement at $125 as against a much greater cost for the original work. There is also a two volume abridgement, the *Shorter Oxford English Dictionary* which costs only $18.00.

For synonyms Allen's *Synonyms and Antonyms* in a revised edition, 1938, is excellent as is also the well known work of Soule, published in a new edition in the same year.

For foreign languages, the following bi-lingual dictionaries are to be recommended—French, Chevalley and Chevalley, 1934; Italian, Baretti, 1928-36; Spanish, Cuyas-Appleton's, third edition, 1940; and German, Muret-Sanders, 1908, or Flügel-Schmidt-Tanger, 1910.

Harper's Latin Dictionary remains the standard as does Liddell and Scott for Greek, new edition, 1925-40.

There are a number of reviews dealing with scientific advances. All of them are quickly out of date and therefore of doubtful value. A useful manual on terms is Henderson's *Dictionary of scientific terms* in biology, botany, zoology, anatomy, cytology, embryology, physiology, 2nd edition, 1929. Beadnell's English work on the same subject, 1938, is a later work. Two foreign language dictionaries dealing with science both by Louis DeVries are invaluable, his *French-English Science Dictionary,* 1940, and the *German-English Science Dictionary* published in 1909.

For those who require a history of science the work of George Sarton, *Introduction to the History of Science* in two volumes, 1927-31, is highly recommended. Dr. Sarton is the editor of two interesting journals dealing with the history of science, *Isis* and *Osiris.*

A complete set of *Chemical Abstracts* 1907 to date will supply the library with everything available in any other of the journals which abstract chemical literature. It is the one most complete source of information of its kind. A good brief manual of the literature of chemistry is the one prepared by Mrs. Grace Cameron of Louisiana State University in 1940.

I take it for granted you know Merck and Company's *Index-Encyclopedia for Chemist, Pharmacist, Physician,* etc., published once in ten years, last in the 5th edition, 1940. Another phase of chemistry is

treated in Chamot's *Handbook of Chemical Microscopy,* 2nd edition, 2 volumes, published by Wiley.

Now to mention briefly some other scientific works which answer the unusual question—for American Indians the *Handbook of American Indians,* a Bureau of Ethnology publication, two volumes, 1912. Clayton's *World Weather Records,* 1927-34, a Smithsonian Institution publication, is an unusual compilation; Britton and Brown remains the standard work on the illustrated Flora of that part of America north of the warmer regions. Bailey's *Standard Encyclopedia of Horticulture,* 1925, 3 volumes, is still the most useful work in its field. Bergey's *Manual of Determinative Bacteriology,* now in a fifth edition is to be recommended.

If handbooks of Natural History are required, those published by the National Geographic Society supply the information in popular form.

For quick reference most libraries need a book of formulas. Hiscox *20th Century Book of Formulas,* 1934, or the *Scientific American Encyclopedia of Formulas,* 1911, are satisfactory.

There is a new work, a *Source Book of Medical History,* compiled by Logan Clendening, which has been referred to as the "Larned of Medical History," high praise indeed.

Thorpe's *Dictionary of Applied Chemistry* has been appearing since 1938 in a fourth edition. It is the standard work on the subject.

Who manufactures what and where is well answered by either of the competing works, Thomas' or Hendricks' *Register of Manufacturers.* In this connection, I have often found the journal *Consumer's Digest* valuable in pointing out defects and good qualities of competing manufactures.

We come now to literature, with which even the medical reference librarian must occasionally be concerned. For a brief history of English literature Sampson's *Concise History,* 1941, is recommended. Harvey's *Concise Oxford Dictionary of English Literature,* 1939, is also a good work. Keller's *Digest of Books,* 1939, is a time saver for those who wish to get the gist of what there is no time for completely reading. Edith Granger's *Index to Poetry and Recitations* now in its 3rd edition is valued everywhere.

In standard works of quotations the following may be recommended —Stevenson's *Home Book of Quotations* and *Home Book of Verse.* Bartlett's *Familiar Quotations* has now reached an 11th edition. There is a new and clever book of quotations by H. L. Mencken. Tireless Burton Stevenson has also written a *Home Book of Shakespeare Quotations* which serves admirably.

For vacation guides I am inclined to the vast amount of useful free literature rather than to published books. Transportation companies

and organized governments will supply a bountiful supply of such literature on request.

The useful American Guide Series published under the direction of the Writers Project of the Works Project Administration may be mentioned in praiseworthy terms as being in the nature of permanently valuable printed accounts of localities.

Lippincott's *New Gazetteer,* no edition later than 1931, is still a useful reference book.

In a rapidly changing world, what should be done about atlases? One enterprising newspaper office makes its own atlas by pasting together timely maps from newspapers, periodicals and other sources—thus keeping abreast of the times. Until geographical lines are re-established by peace that seems a good procedure.

It is convenient to have at hand a good many biographical compilations. The standard work for America is the *Dictionary of American Biography* as the *Dictionary of National Biography* is for England. In single volumes, *Who's Who* (England), *Who's Who in America, Who's Who in Latin America,* the *Canadian Who's Who, Leaders in Education, American Men of Science*—each fills certain needs. One German *work,* Poggendorff's *Biographisch-Literarisches Handwörterbuch* completed in 1901-26, is invaluable as a contribution to science.

The American Library Association *Portrait Index* published as long ago as 1906 is still the best work of its kind. No one can understand why so useful a work is not revised and brought down to date.

One final word on history. In a single volume work, the *Langer Encyclopedia of World History,* 1940, a revised version of Ploetz is recommended. For quick reference James T. Adams' *Dictionary of American History,* 1940, is a most helpful acquisition.

I have probably omitted mention of some works you would have included and some of my selections will not appeal to all of you. What I have presented is little more than an approach to the subject. Among yourselves by a process of comparison and elimination you could doubtless agree upon what non-medical reference books would be most useful to you in your daily work. Such a compilation might prove to be a worthy bibliographical project.

YELLOW FEVER AND ITS INFLUENCE ON THE DEVELOPMENT OF NEW ORLEANS*

By A. E. Fossier, M.D.

More than one hundred years ago, although New Orleans was scarcely larger than a village, she focused on herself world-wide attention. It was universally predicted that she was destined soon to become not only the largest city in the Western Hemisphere, but as well one of the greatest metropolises of the Universe.

Her geographical position was ideal. Her great port, the gateway of the Mississippi Valley, her strikingly increasing commerce with all nations, her enormous wealth, her rapidly growing population—all were logical factors leading to that universal prophecy. For many years this notorious city of destiny, situated in an insalubrious swamp, was subjected to inundations, and was a constant prey to epidemics and deadly diseases. New Orleans was then known as one of the most famous pest-holes the world had ever known, yet despite that handicap (for its ill repute was well deserved), she not only prospered, but achieved renown through the greatness of her port.

The lure of an eldorado and the rumors of fabulous wealth quickly acquired, dispelled all fears and conquered all hesitation, even in the hearts of the most timorous. Yearly in ever increasing numbers from the world over, adventurers, laborers, business and professional men, would flock there only to fall victims of her dread epidemics, and unfortunately but too frequently prematurely fill a wet grave. Yet, despite calamity with its most hideous aspect, these pioneers never faltered, but with superabounding faith in the future greatness of their city, labored, suffered and died there!

From its founding in 1718, to its acquisition by the United States in 1802, during the period of the French and Spanish domination, the growth and progress of New Orleans was slow and unimportant. During the middle and the later part of the eighteenth century the population consisted of 3190 persons of whom 1265 were slaves.

Her isolation from the rest of the world, resulting in restrictions on her commerce, and also difficulties of lengthy and perilous sea voyages even from the neighboring countries bordering the Gulf of Mexico and the Caribbean Sea, as well as from the undeveloped wilds west of the Alleghenies, brought about few accessions to her population. Her great-

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est era of prosperity is the period following the Battle of New Orleans to that of the War between the States. She was then the boom city of the world with a manifold increase in population.

The *New Gazetteer of the United States,* published in Hartford, Connecticut, in 1834 evaluated the possibilities of New Orleans in the following:

"New Orleans possesses extraordinary facilities for commercial enterprise; and indeed, no city in the world can boast greater advantages than this. The Mississippi and its tributaries afford a navigable steam boat communication through a most fertile country, of more than 20,000 miles. The commerce of New Orleans is of course very extensive, and during the season of business, perhaps no city in the world exhibits, in a higher degree, the appearance of a great commercial emporium."

It also cited the fact that the "city is admirably situated for an intercourse with the West Indies, and great quantities of products of the Mississippi Valley are annually transported thence."

Even Thomas Jefferson, whilst President of the United States expressed the opinion that "the position of New Orleans certainly destines it to be the greatest city the world has ever seen. There is no spot on the globe to which the produce of so great an extent of fertile country must necessarily come."

Dr. Joseph Jones in 1880 wrote that "after Louisiana fell into the possession of the United States, it was boldly predicted that New Orleans alone will be forever, as it is now, the mighty mart of merchandise and produce brought from more than a thousand rivers. Unless prevented by some great accident in human affairs, this rapidly increasability will, in no distant time, leave the emporia of the Eastern world far behind. With Boston, New York, Philadelphia and Baltimore on the left, Mexico on the right, Havana in front, and the immense Valley of the Mississippi in the rear, no other such position for the accumulation of wealth and perpetuity of wealth and power existed."

The exports of New Orleans fluctuated from $3,371,545.00 in 1805 to $7,500,000.00 in 1820, and in 1830 it increased to approximately $15,500,000.00. During the following ten years it had doubled.

In 1802, 263 vessels entered the port with a tonnage of 23,725 tons. In the issue of the *Bee* of November 9, 1835, is recorded that the levee had been crowded for the past three or four weeks, and that at that time there were 123 brigs, ships and schooners in the port. Four of which were British, nine Mexican and the others of American registry. That was the glorious period in the history of the American merchantman. In another issue it editorially predicted that "it cannot be many days before the Mississippi will be covered with vessels and steamboats laden with the most valuable products of the globe."

During the following decade, 1850-1860, the exports increased from $38,105,350.00 to $108,393,567.00, and the imports from $10,760,499.00, to $20,920,849.00. During the same period, the arrivals of sea vessels, both steam and sail, numbered approximately 2,100. The steam boats more than 3,000. These figures describe the remarkable expansion of trade in New Orleans at that time.

New Orleans had three great impediments to stunt her development. They were: the war between the States, the advent of the railroads and yellow fever.

The first great setback to the growth and prosperity of this city must be attributed to the War of the Confederacy. When New Orleans fell to the soldiers under Butler, its port was closed to commerce and its business was disrupted because of the establishment of martial law with the inevitable blockade and the confiscation of property. The scarcity of food and the lack of necessary medicines undermined the health of the inhabitants and sapped every ounce of their energy and resolution. Its citizens were impoverished and the high death rate which prevailed during the occupation, despite the absence of yellow fever during that time, were potent factors conducive to the deterioration of a conquered people. New Orleans then suffered all the ignominy of a subjugated population.

For the conquest of a free people is always followed by years of desolation, poverty and an enforced lack of initiative. It is not until the old order is supplanted by a new that normalcy is restored.

Even after peace was declared the citizens of this city were under the yoke of an inefficient despotic government controlled by a minority of infamous carpet baggers, army followers and negroes, many of whom were former slaves. For nearly a decade after the cessation of hostilities the slave owners were governed by their slaves and renegade whites. Property was taxed to the point of confiscation, and many of the already impoverished former Confederates, men and women of wealth and culture, expatriated themselves in disgust. New Orleans thus lost many of her most prominent citizens and these were the dark days in her history. It was not until the memorable day of September 14, 1874, that they were able to throw off the yoke of that tyrannical and despotic government.

Under such conditions it was inevitable that the city should suffer a setback which took many years to overcome. Even as late as 1880, statistics showed that its imports and exports were very much less than they were during the fifties. During the years 1861 to 1865, New Orleans was excluded from active participation in foreign and domestic commerce by the Civil War. It took her many years to regain her former place among the great shipping centers of the world. During the fiscal

year of 1858-1859, more than 3,000 sea going vessels arrived in New Orleans. In 1881, only 1,002 entered her port.

The effect on the growth of her population during this time, was just as pernicious. According to the United States census the population of New Orleans for the year 1850 was 130,565; in 1860, 168,675; in 1870, 191,418, and in 1880, 216,140. A survey of these figures shows that during the ten years before the war, New Orleans had an increase of 38,110 inhabitants, while during the twenty years (1860-1880) it was only 45,465. But this is not all. Before the war the colored population numbered 28,787, compared to 24,074, in 1860. The whites for the same period increased by 42,823. During and after the hostilities the negroes increased in great numbers, and the whites showed a reduction. During the siege and occupation of New Orleans the negroes increased from 24,074 to 37,282, and in 1872, to 51,969. In the same period the white population was stationary. These interesting figures prove beyond a doubt that the first great obstacle in the development of New Orleans was the War between the States.

Another great obstacle which retarded the progress of this city was the advent of the railroad. Immediately after the cessation of hostilities and when the nation was again united, the building of our great system of railroads progressed rapidly. Before the railway came, the only avenue of export for the commodities raised in that large and fertile section of the country, practically extending from the Alleghenies to nearly the Rockies, was New Orleans. Because of the lack of any available means of shipping that ever increasing commerce to the Eastern seaboard, its only outlet was down the Mississippi and its tributaries to the Gulf of Mexico.

On the tenth of January, 1812, New Orleans celebrated a momentous event, the arrival of the first vessel propelled by steam on the Mississippi river. It made the voyage from Pittsburgh in the then incredibly short time of 249 hours. The steam boat appropriately was named the *New Orleans*. From this humble beginning the river traffic made rapid strides, for we read in a contemporary newspaper, the *Bee,* that 1,600 steamboats docked there in 1832, and more than 2,300 in 1833, and that their number was ever increasing.

The historian Augustin, writing about that period says, "Life was easy in New Orleans at that time, for the city was not only a great place of import and export from its position near the Gulf, but owing to its river facilities, not yet antagonized by the railroads, it controlled with scarcely any competition, the whole trade of the West."

It may be said after the late eighteen eighties that the palatial packets which plied the Father of the Waters, and its tributaries gradually disappeared. The railroads had invaded their territory and travellers

preferred the faster mode of transportation. Cargoes were procurable only from limited and isolated parts of the country as yet unreached by the railroads. Today we have left only the memory of the luxury, the romance and the prosperity of the steamboat days.

The luxurious Mississippi packets have vanished from the muddy waters of that great river. Only a few and smaller ones are to be seen today. With them also practically vanished the golden days of the Southern planter, as well as the culture, which was formerly his. Renowned for its romance, leisure, chivalry, refinement and hospitality, this era, for years to come, will be a well of inspiration to the poet and the novelist.

Yellow fever played a sinister rôle in shaping the destiny of New Orleans because it persistently decimated its population for more than a hundred years. The annals of that devastating pestilence is an epic of fortitude, tenacity and grim determination of a people who were enduring untold suffering and premature death in its most hideous aspect. It is a dark page in the history of human suffering. None but the bravest of the brave could have resisted such a continuous calamity, and yet have persisted in a determination to build up their city.

During the provincial days, the mortality, although very great, at no time reached the exceedingly high death rates which prevailed for many decades following the Louisiana Purchase. The history of the first eighty years of Louisiana is practically silent concerning its medical aspect, and but scant reference is made to its epidemics. New Orleans was then only a village. Its destiny but a pawn in the vagaries of a turbulent Europe. Yet the romance of that period is emblazoned with golden letters in the history of our great country.

Long before yellow fever invaded New Orleans it had visited many of the large cities on the eastern seaboard of the United States. There were known epidemics of that disease as early as 1668, in New York, 1691 in Boston, 1693 in Philadelphia and 1699 in Charleston. It was not until the year 1796 that New Orleans experienced her first epidemic of the yellow plague. Some writers contend that the disease made its appearance there before that time, notably in 1769 and 1791, and in 1793, 1794 and 1795, but the writer after a careful search is fully convinced that such opinions are not based on authentic facts. An anonymous writer, evidently a physician, who wrote in the *Louisiana Courier* of November 27, 1820, and well known authorities on the subject, Doctors Thomas, Delery, Barton and Carpenter, in the early eighteen hundreds, definitely state that the first epidemic occurred in this city during the summer of 1796.

For one hundred and nine years (1796 to 1905) this city was a prey to ever recurring epidemics of yellow fever which was not indigenous to its soil, but was transplanted here by its commerce from the West

Indies, Cuba and Mexico. During this period, 38,771 deaths from that scourge have been recorded, an approximate average of 359 per year. It may be stated that these figures are too small by far because there was always a tendency, especially in the beginning of an epidemic, to conceal the facts for obvious reasons. In the early years no efficient efforts were made to collect vital statistics, and those available to us were taken from the records of the sextons of the cemeteries. Assuredly many victims of that pestilence were buried in unnamed graves and without records of their deaths. The precipitate exodus of many thousands of those unacclimated to yellow fever, following the announcement of the supposed first case, caused untold numbers with the seed of death in them to fall by the wayside.

In the New Orleans *Gazette* of February 3, 1816, is recorded the following dramatic episode, which unfortunately was only one of many. It reads:

> "In 1817, while the yellow fever was epidemic in New Orleans, Phillip's barge left the city for St. Francisville, and soon began to lose her passengers and hands. To replace the latter, new hands were continuously engaged, who took the disease in succession, so that it was with great difficulty the voyage was performed; and finally, of the captain, crew and passengers, not one survived."

Again in the same newspaper of October 10, 1822, we find:

> "Steamboat Hecla, bound for St. Louis, now is aground some miles above Natchez, the Captain and many members of the crew also died, the remaining passengers and crew abandoned the boat."

Yet the records show that only eighty persons were victims to the epidemic of 1817.

New Orleans had sixty-three outbreaks of yellow fever in one hundred and nine years. In 1832 New Orleans experienced the most terrible affliction in her history. That year while in the throes of a severe epidemic of yellow fever, on the twenty-sixth day of October, cholera was declared. Within a few days more than one sixth of her inhabitants died. Of a population of 55,084, there were 8,099 victims; a death rate of 147.10 per thousand.

Governor Roman in his message to the State Legislature regretted to say that its visitation (cholera) has been more fatal than in any other city of the Union. That year New Orleans suffered a calamity comparable only to the devastating plagues which ravaged Europe and Asia during the dark ages.

For forty-three years (1817-1860) New Orleans was yearly visited by the dread disease. During that period there were 28,192 recorded deaths from the black vomit: twenty-three of these epidemics claimed over a hundred victims. The most deadly of all was the one of 1819,

when one out of every twelve inhabitants died, or 2,190 deaths in a population of 26,132. Even these figures do not give a clear picture of the virulence of that scourge because of the large number of creoles, the indigenous element, and of negroes, who enjoyed a certain degree of immunity. Dr. Delery claimed that while apparently immune, the creoles of the city were subject to the disease, but because they acquired it principally in their early childhood, they rarely contracted it in later years. Creoles from the neighboring parishes were apt to contract yellow fever when visiting the city. These epidemics unleased their fury upon the large number of visitors then remaining in New Orleans.

In the early nineteenth century, Jabez Heustis commenting on that fact, claimed that the reason the Americans were more subject to that disease than the French, was no doubt due to the difference in their manner of life, and habits of temperance and sobriety. "The French" he wrote, "drink little or no spiritous liquors; in place of which they substitute the small acidulous wines, particularly claret. The Americans, on the other hand, influenced by taste, strangely and erroneously imagine, that the use of distilled spirits is necessary to preserve them against the fogs, damps and sickly vapors of the climate; a fatal opinion, and a destructive practice, which has committed greater ravages than the sword, and sent many vicitims to the shades of death, than ever the arms of war sacrificed at the shrine of ambition, cruelty and rapine."

The highest death rate occurred in the eighteen fifties. During the six years (1853-1858), 18,069 persons died of the yellow jack. The estimated population at that time was 155,000. During that period approximately one out of eight persons then living in this city, died of that plague. The most lethal was the one of 1853; the recorded deaths numbered 7,849, which was considered low by many authorities, who estimated it to be nearly 12,000. Dr. Toutre claimed that in 1835, one out of every six inhabitants must have died in that epidemic.

Yellow fever was very much more malignant during the first half than it was during the last half of the nineteenth century. The epidemics were not of equal virulence. In some the disease was fatal in nearly every case, again in others the malady was of medium intensity with a low death rate, and in still others, it was so mild that nearly every patient recovered. The number of recorded deaths was not an indication of the virulence of that plague, because the proportion of deaths to the number of cases varied considerably in even the most fatal of epidemics. Dr. Toutre lost one patient in three in 1867, and one adult in twenty-nine, and one child in fifty-two in 1878. Yet both were epidemics of maximum intensity. Whilst during the epidemics of 1870 and 1873, which were mild, he lost one in fourteen, and one in thirteen cases respectively. In 1897, he treated seventy patients without a single fatality. He explains these startling differences in the mortality by the two fol-

lowing laws. The first: all severe epidemics began in May, June or July, and that it has taken one, two, or two and a half months of incubation, after the importation of the first case, before the disease became epidemic or claimed many victims. The second: all epidemics beginning in August and September have been mild, have lacked virulence, and have shown a slight mortality.

The causative factor of yellow fever was the subject of many great and prolonged discussions. Many theories on its etiology and treatment were advanced, and many learned contributions on the subject were published in our local medical journals. Their logical deductions and purity of language attest the superior minds of great and learned physicians. Although these essays are buried in the musty shelves of our libraries, they are well worth reading even to this day.

It was thought that the first epidemic (1796) was caused by the digging of the Carondelet Canal. The theory that epidemics resulted from the excavation of the soil persisted for many years afterwards. In 1818, Dr. Thomas considered that one of the causes of epidemics, but he thought also that intense heat and great humidity, or rains following great heat, were causative factors. Dr. Carpenter maintained in 1844, that yellow fever was not caused by heat, moisture, moist air, miasms, filth, or by a crowded population. He asserted that neither its occurrence nor its violence bore any direct relation to temperature.

In 1849, Dr. Delery advanced the theory of a specific miasm, the *typhus icterode,* but also acknowledged that the cause of yellow fever was not as yet demonstrated. The only prophylactic measures he advocated for the unacclimated were to live a regular life, and avoid as much as possible exposure to the sun during the summer months, and the coolness of night air and to wear during the summer a light flannel undergarment to prevent the perspiration from cooling the skin. The observance of these precautions, he claimed would, prevent the disease, or at least attenuate its gravity.

In later years the bacillus icteroides of Sanarelli was considered by many of our distinguished practitioners as the specific factor in the causation of yellow fever. Long before the historical experiments of the United States Army Commission in Havana, the theory of the transmission of yellow fever by insects was advanced. As early as 1817, Jabez Heustis wrote that he never knew of an instance wherein he had the least suspicion of the disease being communicated from one person to another. Barton stated in 1832 that "Diemerboeck observed an uncommon abundance of insects for many years had been noticed to portend pestilence, and we accordingly remarked here, that the flies and mosquitoes particularly, were unusually numerous preceding the epidemic, the latter continued throughout the summer." Dr. Josiah C. Nott of Mobile, Alabama, published essays on the pathology and the cause of yellow

fever in the *American Journal* of April 1845, and in the March issue of the *New Orleans Medical and Surgical Journal* of the same year, in which he gave his reasons based on logical deduction for supposing the specific cause of yellow fever to exist in some form of insect life, notably the mosquito.

Yellow fever had a baleful effect on the development of New Orleans, because it not only prevented new accessions to, but dissipated its population, as well as stunted its commerce. For over one hundred years this city labored under the greatest of impediments, yet despite all, it not only survived but prospered. Countless numbers were deterred from emigrating here, and tens of thousands who sought to make it their home, died prematurely. Only the most intrepid would remain during the summer and early fall. Immediately after the first killing frost, laborers, business and professional men would flock to this city of abundance, only to desert it at the approach of summer. During the sickly season only the acclimated would remain. Few of these travelers ever had the intention of making New Orleans their home for fear of exposing their wives and children to the dangers of the epidemics. The suffering, affliction and dire calamity experienced by the people during these epidemics, as described in days past, transcends anything that our imagination could conceive on our most lugubrious day.

The greatest disaster ever experienced by New Orleans, undoubtedly the most devastating in the history of human suffering, occurred in 1832. That summer this city was not only in the throes of a severe yellow fever epidemic, but was devastated by cholera in its most ghastly virulence. More than one sixth of its population succumbed in less than eight days. Those who enjoyed an immunity to yellow fever were ready victims of cholera. It was no respecter of persons, old or young, men or women, white or black, rich or poor. All without discrimination contracted the disease; only a few escaped.

The horror of those days, is a hellish incubus, long forgotten, an inferno which would have had baffled even the vivid imagination of the immortal Dante. The people, crazed in their despairing efforts to escape the loathsome inevitable death which lurked in every corner, became frantic. Only a very few of them were allowed the grace to die in dignity, to have the benefit of medical attention, or the consolation of the clergyman. Many expired alone, deserted by family and friends, and but too frequently unbeknown, till the nauseating stench of their putrid bodies loudly announced another victim. There were no funeral ceremonies to eulogize those unfortunates. Unshrouded, they were carted en masse, to be dumped in shallow watery graves.

The sing-song sepulchral cry of the negro cartman, soliciting bodies to haul to the graveyards, resounded through the night. The atmosphere polluted by the nauseating putrid stench of decomposed human flesh.

A heavy smoke of burning tar in the city streets, hung like an ominous pall over the city. Cannons were shot to clarify the atmosphere and to desintegrate the miasms. All made a woeful picture that must have taxed human endurance to its utmost.

Dr. J. S. McFarlane, then in charge of the Marine Hospital in New Orleans, in an article in the *Courier* of November 12, 1832, described graphically the then existing conditions as follows:

> "The subscriber requested Mr. John Conn to offer any price for assistance, but none could be obtained, He also authorized his friends to proceed up and down the levee and engage assistance at any terms, but none could be obtained. He also called upon Mr. Holland and urged him to permit some of the persons who were confined for minor offences to aid in performing the necessary duties at the Infirmary. Mr. Holland sent a large number, but they never came. The dying and the dead were continuously arriving. It was neither the duty nor the province of the subscriber to bury the dead sent by the Mayor, and it was but by courtesy that he originally consented to do so at his desire. Finding that the attendants were inadequate to attend on the living and bury the dead, orders were given to admit no more. Controversies arose with those who brought them, but they refused to take them away. At length they accumulated, twenty frequently arriving during the day, the attendants exhausted by fatigue, sickened, and a majority of them died; among whom were slaves belonging to the subscriber of the value of $5,000.00, leaving but three, two of whom were females, to supply the remaining inmates of the Infirmary with food and medicine."
>
> "The convalescents could not be induced by any offer of remuneration to lend their assistance. Coffins could not be obtained to receive the dead, nor men to drive the vehicles in which they were to transport to the cemetery. Thus they continued to accumulate, while the subscriber was awaiting with horrible anxiety the hourly arrival of assistance from some of the agents whom he had set in motion to procure it."

Dr. McFarlane was one of the fortunate few who recovered from the cholera.

Although 1832 was the year of affliction yet nearly as disastrous epidemics were of frequent occurrence. Even as late as 1878, now well within the recollection of many, New Orleans was prostrated by a terrifying epidemic of yellow fever. That year the disease spread from the Gulf of Mexico to Chattanooga and St. Louis.

Withal, despite these dire calamities, immediately after the first killing frost, the prostrated city would conceal her mourning and forget her sorrows. The anguish which had hovered like a pall over the city during the summer and fall would quickly disperse. Commerce would be resumed. Strangers would flock there by thousands. Places of amusement would reopen their doors and gayety would reign supreme. Little thought would be given to the catastrophe of the past, and less done

to prevent its recurrence, until hope was again shattered by the announcement of another first case.

Quarantine against yellow fever was first proposed in 1818 by Governor Villere, because it was then believed that the disease was imported. In the year 1820, at the request of Governor Robertson, the State Legislature passed a law establishing a quarantine. Since that time, diversity of opinion as to the efficacy of such drastic preventive measures, and the fierce clashes between business men and public health officials, caused frequent passing and repealing of quarantine laws. Vessels were detained at the quarantine station located at the mouth of the river, for a period of ten days during the summer months, or were subjected to fumigation. The loss of time and the expense involved discouraged shipping, as well as diverting cargoes to competitive ports. It was not until the last epidemic in 1905, that quarantine was discontinued.

During the epidemics intercourse with neighboring states was prevented by a shotgun quarantine and detention camps, which resulted in a complete isolation of the city. All the manufacturers ceased to operate because there was no possible way of shipping goods out of the city. There was a complete business stagnation which resulted in irreparable losses.

The excessive number of deaths caused by yellow fever, the dissemination of her people, and the deterrent effect on countless numbers of potential settlers, materially stunted her population. Had it not been for that scourge New Orleans would be now one of the very largest cities in the United States. It was not until 1905 that the Crescent City conquered her most implacable enemy.

This historical, unique, pleasure loving, hospitable, progressive and cultural city, bears favorable comparison now in health and sanitation, to any large city in the Union. She is not only a healthful, but a most pleasant place in which to live. Her growth has been steadily increasing, and today she is on the verge of a boom similar to the one that was hers one hundred years ago. Verily it seems that the predictions made about New Orleans are about to be fulfilled.

HOW TO ADVERTISE YOUR LIBRARY*

By MILDRED V. NAYLOR

HARVEY CUSHING SAID in his exquisitely written address, The Doctor and His Books: "It is futile to counsel the undergraduate to make use of a library. Books must be put in his path so that he will stumble over them."[1] If this is true of the undergraduate, it is more than true of the busy practicing physician.

If you are fortunate enough to have any say in the matter of choosing the location of your library, choose the hub of your institution where you will be a constant reminder to all who enter that they should read, and that you have what they should read. Discard, as far as practical the conventional atmosphere of a library; permit smoking if possible as it is apt to go hand in hand with relaxation and reading. Chatting, if not too loud to disturb others, may be countenanced, so that cases can be discussed. An unnaturally quiet room may not be as attractive as a comfortable one, and rare is the M.D. who needs absolute quiet for reading. Doctors, whose lives are surrounded by noise and emergencies, learn to concentrate, and since much of their time is spent in the hushed quiet of the sick room, normal human noise and movement is not distracting to them.

Medical libraries fall into two distinct groups. The university or medical school library which caters to faculty and students forms one group. The society, or academy library, forms the other group, which depend mostly on practicing physicians for support, but which must not refuse their reading privileges to anyone, including laymen. While the same methods of advertising might be used in both, the scope and subject matter would differ.

In the first group you are offering students something which is the open sesame to their studies. At this time students' habits for their professional lives are being formed, and a university library offers them one of the best possible habits to acquire. Many medical schools are now giving instruction in library use with projects to ensure good results, so that school libraries may not find it as necessary as formerly to advertise. The Library Bulletins of the Agramonte Memorial Library, which Mr. Postell compiled, were a fine bit of advertising. He has also covered the subject of medical school library advertising very thoroughly in his article, "Stimulating Interest in a Medical School Library."[2]

* Presented at the 44th Annual Meeting of the Medical Library Association, New Orleans, May 7-9, 1942.

The second group of libraries should reap many benefits from the groundwork laid down by the first group, for the student, used to the limitless facilities of his school library, immediately feels the lack of a library when he starts out in private practice. Few young physicians have funds for book purchases and journal subscriptions, nor do they have proper space and equipment to house them, so that society libraries should make a special effort to attract the man just starting out. Dues should seem small compared to the benefits to be reaped from the privilege of browsing in an up-to-date library and taking home such books as need study. Dr. Osler, who probably had as fine and complete a private library as any man ever had, "made it a habit at Baltimore to go to the Medical-Chirurgical Faculty of Maryland several times a week before dinner, after his consultations of the day were over—and he made notes consistently of what he had read. He remained humble all his life, learned as he was, always among the first to acknowledge what he owed to medical libraries."[3]

There are certain prescribed methods which any library can use for advertising. These are the use of signs and posters; exhibits; articles in newspapers and local bulletins; booths at large gatherings of the profession; talks at society meetings; campaigns; and statistics. I shall take up each one separately.

No library could exist without signs to guide the uninitiated, and posters are almost as essential but harder to manage unless someone on your staff has a knack for this sort of thing. On specific occasions or to brighten up a dark corner, a small outlay of money for posters might bring good results. Well made posters placed in other parts of your building; in hospitals; public places; and where the profession, in particular, congregate, and changed frequently, will preclude all possibility of any interested person not knowing of your existence. If this cannot be managed, a display bulletin board located in some strategic spot in your own building will help. We used one effectively at one time and still do for certain items. On this board we put

Lists of donors to the library. Appreciation always brings added gifts.
Lists of new books and new journal subscriptions.
Lists of journals as they are bound.
Missing numbers of journals needed to fill our gaps.
From time to time we put reminders of long files of journals which we have in the stacks and not within the radius of every day vision.
At one time we ran a series of specialty journals by subjects, whether we had the journal on file or not.
We list books received for review from publishers and requests for reviewers.
Also quotations from great men, Osler, Billings, Cushing; poems, pictures, caricatures; Frank Place's instructions "Verify Your References."[4]

Even jokes may be apropos. All is grist which comes to our mill. We particularly like the beautifully printed cards sent out so generously by Northwestern University Medical School. Paper covers of new books make a colorful bulletin display, and are ideal to use at Christmas time to call attention to books which would make suitable Christmas gifts.

Probably every library has exhibits of one kind or another, if they have any space at all which can be devoted to them. Anniversaries of historical occasions, both universal and local; books old and new on specific subjects; the latest discoveries with their historical background; these are merely brushing the surface of the kind of library material which can be exhibited. When our one-time reading room was really the entrance hallway to our auditorium, and the library was not open in the evenings, we used the reading table, on nights when meetings were held, to display articles written by the speaker of the evening, and articles appropriate to the subject of his paper. This may, at times, have been disconcerting if the speaker had not prepared a good paper, but we were out to make known our resources—so let the speaker beware!

Seasonal articles in local newspapers is another way to bring your library to public attention. This may bring you some of the wrong kinds of users, but it is better to deal with them temporarily, thus exercising your tact muscles, than to have your library unknown and unused. Save the unusual request, or write up the human interest story. One of our library committee members writes short library sketches every month which are sent to the county societies of New Jersey asking that they be published in the county society bulletins. We think these have been one of our most effective ways of bringing the library to the attention of the profession.

When our Essex County Medical Society held an exhibit for the laity, we were given a booth at a strategic spot near the elevators which brought all visitors to the hall. We used seven wall museum cases, lent by the Newark Museum, each one representing a different subject. The seven subjects chosen were Medicine, Surgery, Dentistry, Hospitals, Associations, Journals, Pharmacy. A card in each case gave short résumés of the subject; old and recent books, and where possible, museum objects, illustrated it. Three flat museum cases divided the space into alcoves. In these cases were displayed some of our collection of rare books; our medal collection; and surgical instruments. Not to deplete our library of new books for the week, we asked publishers if they would care to send books for display purposes. Several did, and we had an attractive book section at one end of our booth with the up-to-the-minute books all in their bright new covers. To explain a little in detail just what was meant by Associations:—we gave a brief history of the American Medical Association and of our own state society; had copies of the first and latest volumes of each society's transactions, and listed the

works and value of each association. In the Journal section we showed copies of the first and latest volumes of the *American Journal of the Medical Sciences,* and of the *New England Journal of Medicine*—the two oldest journals still extant in this country, and explained that these two journals contained in their pages the history of the development of medicine in the United States.

The interest and enthusiasm of the profession in this booth gave us the incentive to have a booth at the annual meeting of the Medical Society of New Jersey at Atlantic City. A space 26′ x 15′ was divided in half. In the entrance half we had a registration desk with attendant; a representative exhibition of our rare books with explanatory posters; the history of the Academy in pictures together with a list of the societies which use our building as a meeting place; and a table on which were placed articles apropos to the scientific session of the day. In the second half of the booth we had a miniature reading room with a long reading table and chairs at which one could read and occasionally look out on the boardwalk and ocean. A low bookcase held the latest books, and on a long shelf was arranged a practical demonstration on how to use the medical indices. Cut-out titles of journals mounted on cards gave a bird's-eye view of what we can supply the journal seeker; a few colorful posters on the walls completed the picture.

Talks at society meetings can be made short and succinct, and can thereby be made the drip, drip, drip that will finally wear away the stony resistance which may be part of the anatomy of your clientele. These can be made similar to the sketches sent out to county bulletins, but with a personal touch added which will be advantageous.

Campaigns are a little harder to manage; they take a great deal of planning and much publicity and loads of co-operation. They must be opportune and consistent, and they should move along with regularity and progression. Much would depend on the size and scope of the field to be covered. I have no first hand experience to give on this subject since it is something we have never undertaken. Perhaps some of you will have experiences to relate which will prove valuable to us all.

Statistics, which are always with us, are like dry cereal, but they have advertising value if served with cream and sugar. Unadulterated numbers of readers, or numbers of books circulated, mean little to the average mind. We divide ours in such ways as the number of incoming and outgoing telephone calls; the number of users into members, non-members, and non-professional; reference questions into short and research; number of books cataloged, purchased and discarded; all kept daily and totaled monthly. In this way they automatically answer the innumerable questions librarians are always being asked about their work. A little realism might be added by comparing your daily work with that of a doctor's; as, for example, the number of users could be

compared to the number of patients a doctor sees in his office, and the research questions to the number of operations performed by a surgeon in a hospital.

A paradoxical method of advertising is to ask anyone for anything you may need for your library. Ask individual doctors to loan their books or journals; ask other libraries; ask pharmacists and publishers. They may get tired of your requests but they won't forget you. The request is two-fold for aside from your securing the article you need at the moment it brings to your benefactor's attention your library and the kind of service you are willing to give, which he himself may need some day. Possibly the first record of "library begging" in this country is in John Morgan's Discourse Upon the Institution of Medical Schools in America, 1765. In it he says: "Perhaps the physicians of Philadelphia, touched with generous sentiments of regard for the rising generation and the manifest advantages accruing to the College thereby, would spare some useful books or contribute somewhat as a foundation on which we might begin."[5]

Take any and every opportunity of informing possible users of your library, the facilities which you have at their disposal. No gadget or idea is too old to try again. To give one example: the phonograph record. In reading what others had done, before I started to write this paper, I ran across an article in our own Medical Library Association Bulletin. In 1915, Dr. W. W. Bulette says: "The Society has just taken a long lease on a suite of rooms, which will be the permanent home of the library, which has grown to nearly 4,000 volumes, we also will shortly install a phonograph, with a clinical lecture course of cylinders, by some of the best men in the United States, and we expect great things from this in the matter of interest and attendance."[6] In 1941 Dr. Geckeler put out a set of seven phonograph records which reproduce normal and abnormal heart sounds![7]

To lead us up to my final point, I will again quote Cushing. In speaking of the dedication of a library, he says: "Meanwhile, no reference has been made to that important official, the librarian, who modestly sits in the background with napkin on knee cogitating over possible ways of developing, on the part of those within the radius of his activity, such conditioned reflexes as would salivate them, no less promptly, at the mere sight of the printed page."[8] So, to come to the core. The most pertinent personal advertising is the ready welcoming smile of the library attendant, and efficient, quick service which can only be given by a well systematized collection. Add a suggestion of wizardry, if possible; pulling the rabbit out of the hat always goes over big with children or adults. Have the wheels so well oiled that the turning is not noticeable.

One thing of which we can be eternally proud. We are not trying

to advertise bits of colored glass or ephemeral baubles. We are collecting, preserving and keeping in order one of the greatest gifts man has—the record of great minds through the ages—a gift which any one who accepts will find bears rich dividends.

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SYMPOSIUM ON TROPICAL MEDICINE

I. TROPICAL MEDICINE: SCOPE AND ACHIEVEMENTS*

By G. W. McCoy, M.D.

TROPICAL MEDICINE may be defined as a branch of the healing art, relating to diseases having their chief or exclusive prevalence in the warmer parts of the world. When we look at the subject a little more closely we find that few diseases are found only in warmer climates; perhaps strictly speaking, only infections due to a parasite with a distribution limited to certain hot areas will be in this class. The African sleeping sickness, whose geographic distribution is limited by the natural range of the carrying agent, the biting fly, could be classified here. Tropical diseases sometimes spread far from their natural habitats; thus cholera, one of the typical ones, has, well within historic times, prevailed in Northern Europe, in the northern part of North America, as well as in this fair city, where a little over a century ago approximately one quarter of the population perished from cholera. On the other hand, nearly all diseases found in temperate and cold climates also occur in the tropics. We think of the common contagious diseases as belonging to the cooler parts of the world. Scarlet fever, diphtheria, typhoid, and pneumonia, to mention only a few occurring everywhere are generally much less prevalent in hot climates. We find too, that such a typically "tropical" disease as yellow fever was epidemic in Philadelphia only a little over a century ago. We think of malaria as a tropical disease but "patches" of it still exist in northern latitudes; indeed, I can remember when it was not so very rare in Washington, D.C. Obviously, the discussion of tropical diseases cannot be limited to those found exclusively in hot climates; indeed, there are not many things in medicine about which we can be rigorously absolute.

In this brief discussion, perhaps one of the first things to consider is the fate of mankind in the tropics. The colored race has done very well as they have perpetuated themselves through many generations and, as far as we know, without any loss of physical or mental vigor. The Egyptians have an unbroken history of perhaps 6,000 years and we have no evidence that this race has not been perfectly comfortable in Egypt. So the problem resolves itself into what has been the fate of the

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white race in the tropics. There are two schools of thought: one, that the white race does badly and cannot perpetuate itself indefinitely, and the other, that it gets along quite satisfactorily in tropical areas. Isolated groups of white men who have lived for years in the tropical colonies and have retained full vigor are evidence that there is no great handicap in health to be encountered. On the other hand, there is a prevailing opinion that there is some deterioration of energy or vigor due to prolonged residence in a hot country and especially that the children should be taken out of the tropics for the school years. Perhaps one man's guess is as good as another and my own opinion is that if special disease hazards are avoided, and usually this can be done, and that the sanitation is as good as in temperate regions, then the health of the white man does not suffer. He may not be as comfortable as in northern climes, but for 3 or 4 months of the year the average climatic conditions, for example, in Manila are, I believe, distinctly preferable to those in Washington, D.C. One health hazard that may be mentioned is heat stroke. It, of course, is limited to hot areas or conditions that simulate those in hot areas, but Castellani, a very great authority on tropical diseases, has this to say of heat stroke, "It is interesting to know that in the United States more cases occur in some of the northern states than in the South."

History

We are likely to think that tropical medicine as a special field of endeavor originated with Sir Patrick Manson, who has been called the father of this branch of the healing art, largely because he contributed much to our knowledge of the subject and perhaps even more because he wrote the first important English treatise in this field. Of course, the problems of tropical medicine long antedated Manson's day, indeed, they are as old as mankind, for did not mankind traditionally have its origin in the basin of the Nile. The first work on the history of mankind with which most of us are familiar is the Bible. In that great book there is ample evidence that the Hebrew people faced problems of tropical medicine. Moses was the first great health officer and he laid down many rules of sanitation that are valid even to this day. In the Bible we find one commonly called tropical disease, leprosy, mentioned by name. I hasten to say that I am familiar with the differences of opinion as to whether the leprosy of the Bible is the same disease we call by that name today.

Usually, a Dutch physician, Jacobus Bontius (1592-1631) is credited with the first treatise relating to tropical medicine, De Medicina Indorum. Bontius practiced his profession in what we now call the Dutch East Indies when the Netherlands was a world power whose merchant fleets sailed the seas without asking the permission of anyone, and whose men of war could meet on equal terms the Navy of any power. Since the days

of Bontius, a number of volumes dealing especially with tropical medicine have been published, and one history of tropical medicine written by Dr. H. Harold Scott, from which I have drawn freely for help in preparing this paper.[1]

The social and economic status of communities are affected by the healthfulness of the people. This is well illustrated in many tropical areas where the development of agriculture has led to a demand for cheap labor to exploit the rich possibilities of the relatively newly discovered land. This promptly led to the establishment of the slave trade and to the employment of slave labor. Speaking of the western world it must be obvious that the African areas or some of them from which slaves were brought were regions in which tropical diseases flourished. It is to the slave trade that we may justly charge some of the infections found in the New World. Let me give you a few examples of what I have in mind. Yellow fever according to good evidence, evidence which is convincing to me but not to all, was brought from Africa to America in the 17th century, where it speedily established a foothold and led to periodically occurring epidemics from which this city suffered many times. Happily, application of modern sanitary methods, the outgrowth of research studies, have made this disease no longer a serious threat to the health and economic welfare of any part of the United States. Leprosy is another disease which probably came to us through immigration, voluntary or otherwise, soon after the western world was discovered. Even to this day, in parts of Africa leprosy reaches a degree of prevalence not equalled anywhere else in the world. It may be remarked that traditionally the leprosy of the Pacific area was distributed through Chinese immigrants; indeed, in the Hawaiian Islands which have suffered exceptionally severely from this disease it is known by the native name, Mai Pake, the Chinese disease.

Tropical diseases have even influenced military operations. Thus there is a good authority for the statement that in 1800 a French army of Napoleon's picked troops landed in Haiti, but in less than a year the mortality from fever, especially yellow fever, had been so great that the survivors withdrew leaving the natives in possession.

Some of the older members of this group may remember, as I do, that when the American army went to Cuba in 1898 as soon as the Santiago campaign had been brought to a successful conclusion, yellow fever and malaria were so prevalent among the troops that army officers serving with these troops joined in a "round robin" to the War Department demanding the withdrawal of the troops, saying in effect that the army must be moved or perish. It is worth noting that one of the signers of the "round robin" was Theodore Roosevelt, who later became President of the United States, now usually designated, *Roosevelt I.*

[1] SCOTT, H. H. A history of tropical medicine. 2 v. Balt., Williams & Wilkins, 1939.

The advances made in tropical sanitation and their influences on military operations can be nowhere better illustrated than by the Italian-Abyssinian War in 1936. It will be recalled that when that war was in prospect it was freely predicted that tropical diseases and tropical climate would prove disastrous to the Italian Army, while the Abyssinian army would suffer much less by reason of their acclimation. How wrong this prediction proved is shown by the fact that the Italian Army remained almost free from tropical diseases. The contrast between the armies of the two nations is well illustrated by the following statement:

The following is a statement by an eye-witness written in a letter from Addis Ababa in July 1936:

> "In the Abyssinian Army diseases (that is, cases of disease) were very numerous; more than half the cases were dysentery; scurvy destroyed the army on the Southern Front, smallpox decimated the army of Mulughieta on the Northern Front. At Dessie pneumonia was raging. The terrible disease typhus was passing from one camp to another killing the victims in a few days. Malaria and relapsing fever were common. Women and children in thousands accompanied the soldiers to the front, but only a few returned, the others being killed by disease.
>
> It is obviously no exaggeration to say that one of the prime reasons for Italian success was the combined health of its armies due to the efficiency of its medical service. It also might be observed that medical science made it possible for people to live in unhealthy climates under adverse conditions and to remain in better health than natives acclimatized by hundreds of years of continuous abode." (A History of Tropical Medicine, Vol. 1, by H. Harold Scott, p. 60, 1939.)

It is pleasing to recall that the sanitation of the Italian army was under the direction of Sir Aldo Castellani, Count of Chisimaio, who in earlier years was a teacher of Tropical Medicine in both of the medical schools in this city.

It is in the field of research and epidemiology and the application of public health measures made possible by scientific investigation, that we find the most brilliant achievements in tropical medicine. The examples available are so numerous that one can choose only a few for even sketchy consideration. Let us take malaria first. This is one of the most important diseases in the world, certainly in the tropics. Its devastations have depopulated whole provinces, ruined agricultural communities, impoverished populations and led to innumerable deaths and vast disabling illnesses. Of course, since the 16th century we have had in Cinchona bark and its derivatives remedies that are of great value for the symptoms of malaria, but on the prevention of the infection we were helpless. There had been suggestions in earlier years that mosquitoes carried malaria, but it took the genius and painstaking labor of Ross and the Italian workers to prove that these insects were the carriers of this

disease. Ross was so overcome with his success that he wrote the following verses sending them to his wife:

> This day relenting God
> Hath placed within my hand
> A wondrous thing; and God
> Be praised. At His command,
> Seeking His secret deeds
> With tears and toiling breath
> I find thy cunning seeds,
> O million murdering Death.
>
> I know this little thing
> A myriad men will save.
> O Death, where is thy sting?
> Thy victory, O Grave?
>
> By Sir Ronald Ross—Aug. 22, 1897.
> (From: *History of Tropical Medicine,* Vol. II, by H. Harold Scott, p. 1087-1088 (1939)).

I am aware that in spite of sure knowledge of how to prevent malaria, the world still has plenty of it. This is due to social and economic factors over which physicians and health officers usually have no jurisdiction. One of the exceptions in which sanitary authorities do have control is to be found in the work of the Tennessee Valley Authority, where by carefully laid and intelligently executed plans, malaria has been greatly reduced so that it is no longer a major problem.

Perhaps the most spectacular and clear-cut results of investigations of any tropical disease are to be seen in connection with yellow fever. Prior to the present century it generally was regarded as a miasmatic or filth disease; then a few well conceived and carried out experiments on human subjects resulted in knowledge so complete and useful that what was long regarded as one of the most dreadful of diseases was so completely tamed that for over a quarter of a century it has been regarded as a typical example of a disease easily and certainly prevented. As is the case with many investigations, guides were at hand to direct the experimenters. For the last 20 years of the 19th century Dr. Carlos Finlay of Havana had been trying to persuade the medical and sanitary authorities that yellow fever was carried by mosquitoes. Then there were the carefully detailed observations of Dr. Henry R. Carter of the Public Health Service on certain peculiarities of the spread of the disease, which led him to suggest that something, or some influence, other than the sick man and the new victim, was necessary to perpetuate the epidemic. Knowing of the work of Finlay and Carter, the U. S. Army Commission especially assigned to study this disease was prepared to

go directly to fruitful experimental work which showed that a special type of mosquito carried the disease, as Finlay had claimed, and that this insect could take up the virus from the sick man only in the early days of the fever and that it could not transmit the infection to a new subject until 10 or 12 days had passed. This period during which the mosquito was maturing the virus, explained Carter's observation that there was a lag between the first case in a community and subsequent cases. Thus by the work of the Army Commission, made up of Reed, Carroll, Lazear, and Agramonte, the world came into possession of the priceless knowledge of how yellow fever could be controlled.

Some of you may remember the annually recurring apprehension of a yellow fever outbreak, often well founded, that swept over the South every summer. There has not been a case of yellow fever in New Orleans since 1905, but during approximately the latter half of the last century there was an average of several hundred deaths annually from this disease. Most other communities in this area suffered less than New Orleans only because they were smaller and had less people to contract the infection. It is well known that without the knowledge of how to control yellow fever, probably the Panama Canal never could have been constructed. But for the tenacity, and the faith of the Master sanitarian, Gorgas, chief medical officer for the Canal, in the findings of the research workers, bureaucratic superiors would have thwarted his efforts to control mosquito borne diseases. It is recorded that when De Lesseps, the great French engineer who had built the Suez Canal, was attempting to build a Panama Canal, the death rate ran as high as nearly 200 per thousand per annum of his workers. I am not charging all of this mortality to yellow fever, as a good share of it was due to malaria; later of course, both were controlled by antimosquito measures, not the same measures, however, could be used because very different procedures are required to combat the yellow fever mosquito and the malaria mosquito. I think it is a fair assertion to say that if all research in tropical diseases had borne no fruit other than the elimination of yellow fever in our Southland, it would have paid for itself many times over.

Within the past few years a type of yellow fever has been found in the interior of South America which appears not to be carried by mosquitoes and so is not readily controlled. If a yellow fever patient from the interior of South America, goes to a sea coast community, the mosquitoes there will carry the disease from the sick to the well.

Another disease in which research has yielded abundant results is bubonic plague, the modern counterpart of the Black Death of the 14th century and of the great plague of the 17th century. These periods in history are but peaks of extraordinary prevalence of this disease that was so devastating that attracted the attention of the historian, but

plague, doubtless, has prevailed to some extent somewhere in the world since at least the beginning of the Christian era. This disease swept at times over nearly the whole known world in epidemics but its last sweep was the first one after the dawn of modern medical research. Within a year from the beginning of this latest excursion the germ causing the disease had been identified almost simultaneously by two scientists, Kitasato, a Japanese, and Yersin, a Frenchman. Within about 10 years more we were in full possession of two fundamental facts: (1) that plague primarily is a disease of rodents, only occasionally affecting man, and (2) that man (or rodents) acquire the disease through the bites of fleas that have previously fed on a plague-sick rodent. This knowledge gained after the most extensive and painstaking research almost simultaneously by Verjbitski, a Russian, and a British Commission, of which Sir Charles Martin was the head, laid a foundation for methods of prevention which were given application by Dr. Rupert Blue, afterwards Surgeon General of the Public Health Service. The methods for control are not always easy to carry out or economically feasible, but they have been of the utmost value. Lest you get the impression that plague is an obsolete disease, I may remind you that New Orleans had a few cases about 20 years ago and that last summer the Surgeon General of the Public Health Service called a conference to study an insidiously spreading epizootic of this disease among squirrels and other rodents in the western half of the United States. I believe that we can with confidence predict that plague never will be a serious menace to any civilized community, the sanitary measures necessary for its control being so simple and effective. They cover all forms of warfare on the rat—traps, poison, starvation and destruction of rat harbors.

There are examples of diseases, first studied in the tropics that have been found to have much wider distribution, thanks to knowledge gained by research in the warm climates. For over a century the Mediterranean basin has been recognized as the home of a chronic, disabling disease, rarely fatal, known as Mediterranean, Malta, or undulant fever. In that part of the world it generally is due to infection from goats which are much used as sources of milk for human consumption. Bruce and his associates established the facts for this disease in Malta, and similar areas, and as far as we know they thought not much more about it. Approximately 20 years ago Dr. Alice Evans and others working in this country discovered that this same disease so well known in Southern Europe and Northern Africa was to be found in the United States, that it was by no means rare and that the usual sources of human infections here were cattle and swine. With this knowledge at our disposal, prevention, at least theoretically, is very easy.

In these days when every journal, most newspapers, and many sign boards carry injunctions urging the use of vitamins, and when distin-

guished students of nutrition tell us that the war may be won on the vitamin front, it may be worth recalling that our first accurate knowledge of vitamins came from studies inaugurated in the Netherlands East Indies in an effort to solve the problems presented by beriberi, a tropical nutritional disease.

SYMPOSIUM ON TROPICAL MEDICINE

II. AMEBIASIS: A TROPICAL AND COSMOPOLITAN DISEASE*

By Dr. Ernest Carroll Faust

Amebiasis is an infection with the one-celled animal parasite *Endamoeba histolytica.* This organism normally lives in the wall of the large bowel and the adjacent few inches of the posterior segment of the ileum, but when opportunity is afforded it may be carried to the liver, lungs, brain and other organs of the body. Invasion of the host's tissues is accomplished partly by the boring movement of the finger-like pseudopodia of the active stage of the parasite, but probably to a much greater extent by the parasite's ability to digest tissues, hence the appropriateness of its name, *Endamoeba histolytica.* Like pathogenic bacteria and like the malaria parasites, this organism propagates rapidly at the expense of the host.

Tissue invasion and destruction by *Endamoeba histolytica* may produce dramatic manifestations, such as bloody dysentery, acute appendicitis, liver abscess, or symptoms suggestive of peptic ulcer and gallbladder infection. The disease may be chronic in character, so that episodes of dysentery or diarrhea may alternate with prolonged periods of constipation. It may be accompanied only by vaguer symptoms, such as loss of appetite and weight, a mild degree of anemia, a feeling of lethargy or a nervous state. Finally, there may be no apparent symptoms resulting from the infection. These various manifestations are conditioned by many complicating factors, including the amount of the inoculum to which the individual is exposed and the number of amebae which develop in his body; the tissues of the body involved; the depths of invasion of the amebae into the tissues; the virulence of the particular strain of the ameba; whether the invasion is complicated by pathogenic bacteria, and, last but not least important, the threshold of resistance of the patient. However these factors may operate, cumulative evidence supports the view that *Endamoeba histolytica* is always in actuality or potentially an invader and destroyer of the tissues of the human body.

In many parasitic infections the human body musters forth battalions of fighting cells, including the leukocytes, which constitute the shock troops, and the macrophages, which are the second line of defense; but

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in uncomplicated amebiasis this host response to the invader is essentially lacking. Thus, highly susceptible individuals offer practically no resistance to the parasite. On the other hand, persons who are well nourished and are in good physical condition are usually able to maintain an equilibrium with the parasite, and repair of the tissues keeps pace with the destructive work of the amebae. Nevertheless, conservative evaluation of this infection requires the conclusion that it is always dangerous to the individual.

Human amebiasis has been found in various populations over the face of the globe wherever search has been made for it. The etiologic agent was first described in 1875 from a patient in Leningrad suffering from acute dysentery. Yet the disease was for several decades believed to be primarily confined to the Tropics, due perhaps to studies made on dysenteric patients in Egypt, in India, and in the Philippines and Panama Canal Zone during the early days of American occupation. Following World War I it became apparent that the geographical distribution of amebiasis was much more extensive than had previously been believed, especially with the discovery that many patients did not display the classical symptoms of acute dysentery or liver abscess. Moreover, the Chicago epidemics of 1933 and 1934 demonstrated that the disease may rapidly assume epidemic clinical proportions in an apparently well-sanitated temperate locality.

Today it is known that amebiasis extends from the Arctic to the Antarctic; in the Western Hemisphere it occurs from Saskatchewan to the Strait of Magellan. It is true, however, that the incidence is higher and the strains of the parasite are probably more virulent in the Tropics than in cooler climates. Native populations in hyperendemic foci, as in Panama, Mexico and Eastern Tennessee, appear to be moderately tolerant to the endemic strains of *Endamoeba histolytica*. But travellers or newcomers to such areas who unwittingly expose themselves to infection usually develop acute dysenteric manifestations. This is an intriguing aspect of the problem which is not easily explained.

In the United States the incidence of amebiasis varies from a low of possibly less than 4 per cent in some localities to 50 per cent or more in other areas. Survey figures are not readily comparable, due to inequalities in the populations surveyed, to the types of diagnostic technic employed, and to differences in competency of diagnosticians. Thus, records based on an institutional group, as a children's asylum, a mental hospital or a penitentiary, are not representative of the general population, just as hospital or clinic patients are not representative. Furthermore, a single stool examination, even with the most efficient technic carried out by competent workers, provides not more than 25 to 30 per cent chance of discovering the parasite. At least three or four such examinations, spaced two or three days apart, should be carried out

on each suspected case of amebiasis before a negative diagnosis is entertained. In spite of these discrepancies in our knowledge the estimate made by Colonel Charles F. Craig several years ago, that 5 to 10 per cent of the population in the United States is parasitized by *Endamoeba histolytica,* is now believed to be overly conservative.

Control of amebiasis in the individual patient depends on efficient treatment. There are today relatively specific, well tolerated drugs which will eradicate this invader. Nevertheless, the infection in the population at large will never be brought under control by the treatment of individual patients suffering from clinical amebiasis, and treatment of the 10 to 25 million persons in the United States who probably carry the infection is obviously impossible. Means must be found to prevent exposure of unsuspecting persons to infection with the parasite.

It is agreed that the stage of the organism in which man is exposed is usually, if not always, the cyst, and that the cyst gains entry to the human body in food and drink or as a grosser contamination taken into the mouth. Cysts are discharged in the formed stools of chronic cases or of so-called "healthy carriers" of the parasite. Just how the cysts get from the infected person to the newly exposed one is still a matter of considerable debate. There are several possibilities, including the following: polluted drinking water; contamination of vegetable crops by the use of human nightsoil as fertilizer; contamination of food on its way from the producer to the consumer by dirty food handlers; mechanical transportation of the parasite by filth flies from open latrines to clean food, and direct contact of one dirty individual with another. Pollution of water supplies certainly may account for spontaneous outbreaks of amebiasis as those which occurred in Chicago, and may be partly responsible for endemic amebiasis in rural areas not provided with sanitated water service. The use of human nightsoil as fertilizer or its deposition by ignorant persons so as to constitute a source of contamination for vegetables, strawberries, etc., provides a major hazard in Oriental and tropical countries and possibly even in certain areas of the United States. Food handlers, particularly cooks, probably contribute their share of the infection. Filth flies, after feeding on human excreta, can carry the cysts internally in their intestinal tract for several hours and then deposit them hours later in a viable form on food or in drink considerable distances away from the original sources of contamination. This last method constitutes a potential and possibly a major hazard in rural areas. Finally, in institutions for children, for the insane and in prisons, wherever large groups are domiciled together, there is frequently abundant opportunity for direct transfer of amebic cysts from person to person, due to neglect of personal hygiene.

A considerable percentage of our military forces, who are even now being exposed to virulent strains of *Endamoeba histolytica* in Tropical

and Oriental bases, will be invalided to their home communities with chronic amebiasis. Not only must these patients be given adequate medical care, but means must be provided to prevent the spread of this disease to contacts.

Thus, amebiasis, which is an important cosmopolitan infection, is becoming an increasingly important disease in our midst. Greater consciousness of its dangers to life and health and more intelligent comprehension of its methods of propagation should be instilled into the average individual. When the public realizes these hazardous implications they will demand practical methods of control.

SYMPOSIUM ON TROPICAL MEDICINE

III. MALARIA*

By ELLISTON FARRELL, M.D.

"MALARIA," wrote Horace Walpole, "a horrid thing that comes to Rome every summer and kills one." Thus the word *malaria* became part of the English language. Since Walpole's day, malaria has become a word familiar to thousands everywhere, and the whole science of malariology has arisen to confirm and amplify Walpole's unpleasant characterization.

A microscopic animal, the plasmodium, is the cause of malaria in man, being transmitted from man to man by the bite of the anopheline mosquito. The forms of the plasmodium first injected into man by the mosquito are known as sporozoites. These soon leave the site of their inoculation, and their exact whereabouts in the human body for the next five days is unknown. After the fifth day, a growing form of the organism unlike the sporozoite in appearance can be found in increasing numbers within parasitized red cells of the peripheral blood. By the tenth or eleventh day every drop of blood will contain at least one infected red cell, and the patient, until now unaware of his infection, will begin to experience chilly sensations, sudden sweats or bone pains. Fever develops as more and more parasites simultaneously mature and subdivide. Their subdivision causes the destruction of the red blood cell within which each plasmodium has lodged. A time soon comes when the plasmodia have attained such numbers that perhaps 50 million or more are undergoing segmentation together, at a cost to the patient of a like number of red blood cells. Toxic substances are periodically released into the blood plasma giving rise to the periodic paroxysms of malaria.

How can one describe this paroxysm? Rather ask, how can one appreciate it without the sympathy generated by experience. First, there comes an uncomfortable sensation of cold. Then chills occur, so severe that the bed may shake along with you. You will beg for extra blankets, and for more hot water bags. Paradoxically, at this very time, the internal temperature of the body is actually rising, and only the skin is cold. For one, two or three hours these chills continue; then, gradually, there comes a welcomed respite. You feel relieved, but not for long.

* Presented at the 44th Annual Meeting of the Medical Library Association, New Orleans, May 7-9, 1942.

Suddenly you are in the stage of fever. The face is hot and flushed; the pulse full and bounding; the head throbs with every heart beat. The discomfort of this hour or two becomes almost unbearable. Delirium may occur. Then, at last, a drenching sweat, rapid subsidence of the fever and a brief, refreshing sleep. The following day you may feel so well that you may regard yourself as cured, but the succeeding day, or, in quartan infections, the second day after, has no sooner dawned than back with a rush come all the horrid symptoms of this thing called malaria.

A horrid thing it certainly is, but does it really kill one? It does. With each segmentation, from 8 to 32 young plasmodia are formed from each fully grown organism. In succeeding cycles of multiplication the number of parasites and of destroyed red cells increases in rough geometric progression. An anemia results. The general powers of resistance are diminished and bacterial invasion of the bowel or of the lungs may follow. Dysentery and pneumonia are frequent causes of death in patients who suffer from malaria.

Malaria has an inherent tendency to relapse. An infected person will harbor the organism perhaps for years. During this period he will not only suffer from the debilitating effects of this latent disease, but acts of sabotage by the plasmodium will make him an easier prey than others to acute infections of all sorts. Or, the organism may make a frontal assault of its own at a time when the general health of the human host is impaired by injury, by local or systemic disease, by exposure or by some surgical procedure.

Malaria under any of the circumstances just cited is the primary cause of illness or of death, no matter what the immediate agent or accident may be, for the plasmodium opens the way to the invader and magnifies the effects of injury. There is one malaria organism, however, the dangerous *Plasmodium falciparum,* which kills without help from bacterial allies or from circumstance. This plasmodium gives rise to "estivo-autumnal" or "subtertian" malaria. The parasite multiplies so rapidly that segmentation becomes asynchronous instead of occurring periodically. Fever may be continuous and the patient is deprived of the refreshing fever-free intervals separating tertian or quartan paroxysms. *Plasmodium falciparum* furthermore has a specific tendency to subdivide within red cells wedged in the capillaries and blood sinuses of the internal organs. Clumping of these infected red cells obstructs the blood supply to vital areas of the brain, liver, spleen or kidney; and when enough of these vital areas die, so does the patient.

Another fatal complication of falciparum infections is an acute anemia entirely unlike the chronic anemia which follows long-continued malaria infections. The cause of this acute anemia is unknown. It occurs chiefly in parts of the world where falciparum malaria abounds. Relative new-

comers to these regions are particularly susceptible to this infection, and a majority of the cases of acute anemia complicating falciparum malaria will be found in the recently-arrived element of the population. A history of repeated inadequately treated bouts of fever will often be obtained. The anemia develops abruptly, by sudden rupture and dissolution of perhaps one half of the circulating red blood cells. The effect on the patient is much worse than the effect of an equally severe hemorrhage, for the hemoglobin normally retained within the living red cell envelope is discharged into the blood plasma in amounts which may damage the kidneys irreparably and fatally. Though fundamentally an acute hemolytic anemia, the renal element in the syndrome has long been recognized from the inky color of the urine in severe cases of what we still refer to as "blackwater" fever.

The anopheline mosquito has a fundamental role in the transmission of malaria. In the blood of infected humans, sexually differentiated forms of the plasmodium occur which are capable of union and further development in the stomach of the mosquito. A motile form of the organism results, which lodges in the stomach wall of the insect. Encystment follows, and within these cysts sporozoites develop. Maturation of the sporozoites is followed by rupture of the cyst and the discharge of the sporozoites into the body cavity of the mosquito. They reach the salivary glands and when the mosquito in biting man injects a tiny droplet of saliva beneath the skin, sporozoites are introduced.

The transmission of malaria is a complex process influenced by many factors. In areas of endemic or sporadic malaria these factors remain in rough equilibrium, some sort of balance being maintained between the number of humans who have malaria, the number of mosquitoes which carry it, and the opportunities for contact between man and insect. Introduce soldiers who are unduly susceptible to infection, or who carry unusually heavy infection and allow them to be bitten by anopheline mosquitoes. The result will be epidemic malaria either among the troops or among the indigenous population or among both, unless malaria control measures are enforced. Increase the surface water available for mosquito breeding and the increase in the anopheline population will have a similar result. In the Punjab this has followed unusually heavy rains. In Ceylon, in 1934, drought led to the drying up of rivers with the formation in the river beds of numberless small puddles that were ideal for mosquito breeding. An increase in the mosquito population was the result, and nearly 60,000 people died in the malaria epidemic which followed.

Malaria research has many fascinating aspects and many unsolved problems. In the achievements of the last generation our countrymen have been among the pioneers. Dr. W. G. MacCallum of Johns Hopkins and Dr. C. C. Bass and the late Dr. F. M. Johns of the Tulane faculty

made observations of fundamental significance. Colonel Charles F. Craig, another early worker in this field, has maintained a lifelong productive interest in malariology. Gorgas, Welch and Thayer we like to remember in the company of Laveran, Golgi, Ross, Grassi and the rest. These have lit the way; but to suggest that our present knowledge of malaria is in any sense complete would be indeed misleading. Obscure problems of malaria control are today a major concern of military surgeons entrusted with the health of thousands of our men on duty in malaria's still vast empire, within the tropics and without. Leaders are needed not only in the fight against the Axis but in the fight against an enemy as ruthless and resourceful as any Axis foe, the small but mighty plasmodium.

SYMPOSIUM ON TROPICAL MEDICINE

IV. THE STORY OF LEPROSY IN THE UNITED STATES*

By G. H. Faget, U.S.P.H.S.

Although popularly considered a rare disease, leprosy still affects several million people throughout the world. It has been a scourge to mankind since the dawn of history. At different epochs it has spread widely among all races, no people or climate having been exempt. During the Middle Ages an epidemic of leprosy swept throughout Europe, reaching its climax from the 12th to the 14th centuries, at which time it was probably the most common disease on the continent. Thereafter it declined rapidly and by the end of the 16th century had disappeared from most of Europe excepting the Mediterranean littoral and certain parts of Russia and Scandinavia, where it lingers to this day.

It must be remembered that, unlike epidemics of acute infectious diseases, which are of a few months' duration, an epidemic of leprosy requires centuries to run its course. For this reason, the introduction of this disease into a new country is a serious matter; unless vigorous measures are soon taken, it may persist for many generations. This is what happened in the Western Hemisphere after the arrival of Columbus.

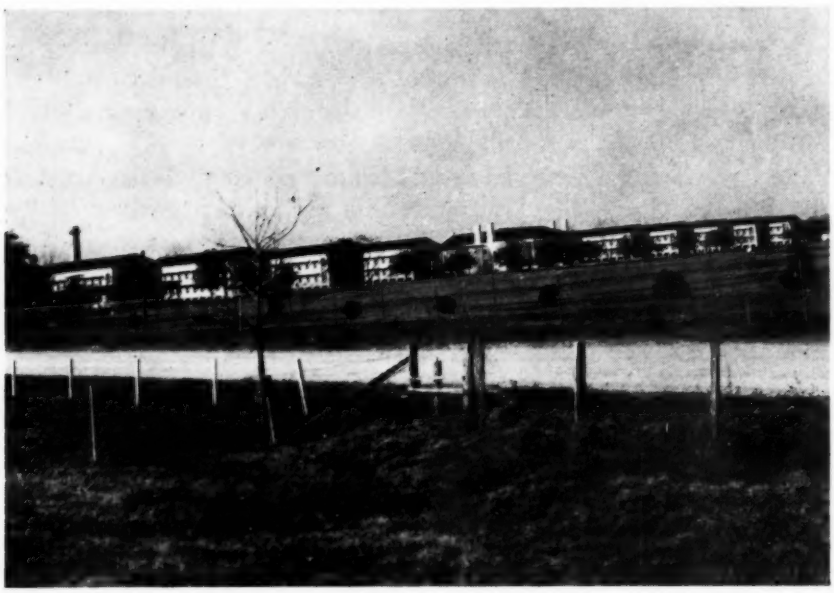
Previous to that time the American Indians were free of leprosy. The disease seems to have been brought into the New World by the early Spanish, Portuguese, and French colonizers, among whom leprosy was prevalent. The number of cases of leprosy in the new world was subsequently augmented through slave traffic from Africa. In this way, leprosy became established in certain regions of the Western Hemisphere, particularly in Brazil, the Guianas, Venezuela, Colombia, the West Indies, Central America, Mexico, and, to a lesser extent, certain parts of Canada and the United States.

The origin and spread of leprosy in the United States has differed greatly in the different states. While for centuries the disease has been introduced through the large sea ports of this country, it has become established in only a few states. In the other states leprosy is still a sporadically imported disease. For example, in New York, of over a hundred patients admitted to the National Leprosarium, only one or

* Presented at the 44th Annual Meeting of the Medical Library Association, New Orleans, May 7-9, 1942.

two could possibly have contracted the disease in New York State. The same condition applies on a smaller scale to the other northern, eastern and central states.

Conditions were slightly different in the states of Minnesota, Iowa and Wisconsin, where leprosy took a temporary foothold after its introduction. It appears that in the middle of the 19th century about 180 Norwegian immigrants afflicted with leprosy settled in these states, the largest number of them in Minnesota. In the following generation, seven cases of leprosy occurred, most of them in the families of the



Approach to National Leprosarium showing large recreation building with patients' dormitories on either side.

imported cases. Thereafter only one doubtful case occurred in the second generation, so that the disease, although it spread temporarily, soon became spontaneously extinct in this section of the country.

In California and the other Pacific Coast states, leprosy has been introduced repeatedly by Chinese, Hawaiian and Filipino settlers; and particularly in California, an influx of Mexican leprosy is also encountered. In spite of this, leprosy is rarely contracted in California; only fourteen such cases have been admitted to the National Leprosarium at Carville.

On the other hand, the Gulf States are recognized as true endemic foci of leprosy, where the disease is slowly but continuously being propagated from generation to generation. Certain parts of Florida, Texas and Louisiana are the most active foci of leprosy in the United States.

The origin of leprosy in Florida can be traced to the early colonial days. Romans, in his history of Florida,[5] written in 1776, describes the existence of leprosy among the negro slaves of that state. Since then, the disease has no doubt frequently been brought to Florida from Cuba and the other West Indies.

In Texas, leprosy is most prevalent along the Rio Grande Valley. The early cases no doubt originated in Mexico but for many years leprosy has been communicable on Texas soil. The records of admission to the National Leprosarium substantiate this fact.

Entrance to National Leprosarium showing the Administration Building, the original owner's old Colonial Home, used at present as offices by the medical and executive personnel.

Of all the states in the union, Louisiana has the highest incidence of leprosy for its population. Leprosy has been a public health problem there since the early French and Spanish colonial days.

Leprosy in Louisiana probably had its source in the West Indies. As early as 1776, cases of leprosy in that state could be traced to Martinique and Cuba.

Because leprosy has always been common among the Acadians of Louisiana, some investigators blame them for the introduction of leprosy into the state. This is now thought to be a false opinion. Leprosy was unknown in Canada prior to the expulsion of the Acadians from Nova Scotia in 1755. The first case of leprosy in Canada was not reported until 1820, long after its appearance in Louisiana.

But it is known that the Acadians are a particularly susceptible race, since their descendants, both those who migrated to New Brunswick and those who settled in Louisiana, have continued to develop leprosy. Otherwise, it would be strange that leprosy should prevail to this day among these closely related people in two such widely separated regions of North America.

Gayarre,[3] in his history of Louisiana, records that during the administration of Ulloa from 1766 to 1768, leprosy was already common in

A patient's bed room. Each patient has an individual bed room which he arranges and decorates to make it as home-like as possible.

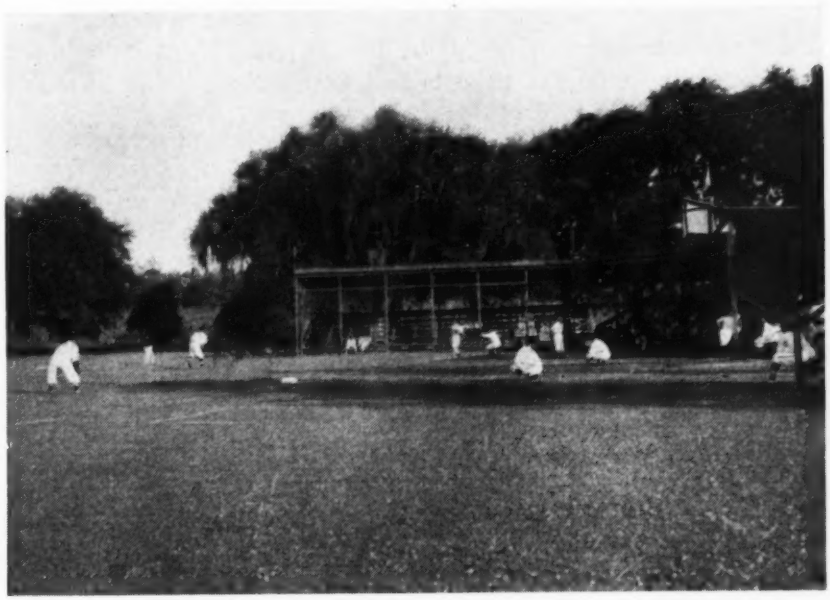
Louisiana. By 1778 it had become so common in New Orleans that Governor Miro caused the erection of a hospital for the segregation of persons afflicted with leprosy. This leprosarium was built on a high ridge of land between the city limits and the Bayou St. John. For a long time afterwards, this land was known as "la terre des lépreux" (lepers' land). This hospital was in operation for about 20 years. Thereafter little attention was paid to leprosy in Louisiana for almost a hundred years.

By 1866 leprosy had been declared to exist in Vermillion Parish, where there were several cases among the French inhabitants. Other parishes in the southern part of the state were similarly infected.

When Joseph Jones[4] became State Health Officer, he was greatly interested in the leprosy situation in Louisiana. In 1880, he investigated conditions in Lafourche Parish and found twelve active cases of leprosy

and evidence of several others. They were all white persons, most of them of Acadian ancestry. He planned to establish a leprosarium in Lafourche Parish and condemned the existing practice of admitting patients with leprosy to Charity Hospital in New Orleans. This plan was never carried out.

That leprosy was common in New Orleans at that time can be judged from the report of Dr. Blanc[1] who recorded in 1888 that he had seen 42 cases within a period of five years.



A ball game between two patients' teams. Patients are encouraged to take outdoor exercise.

The Louisiana Leper Home

Not until 1894 was any constructive action taken. In that year the state legislature passed an act creating a Board of Control, whose function was to provide a home for sufferers of leprosy. By the end of the year a temporary site had been leased for five years in Iberville Parish. This was the old Indian Camp plantation, about 80 miles up the Mississippi River from New Orleans.

On November 30, 1894, eight patients were transported from New Orleans by night on a coal barge towed by a tug and arrived at their new home the following day. Other patients were then admitted from other parishes of the state. Within a year four Sisters of Charity volunteered their services and assumed the domestic charge and nursing care of the patients. The sisters took up residence in the old colonial home

of the abandoned plantation, while the patients were housed in the old slave shacks. This was a temporary arrangement until a site more convenient for administrative purposes could be purchased nearer New Orleans.[2]

In 1900 the state legislature appropriated a sum of money for this purpose. A suitable site was selected in Jefferson Parish near the city of New Orleans. Unfortunately, misguided neighbors were so strongly opposed to having a leprosarium in their vicinity that, when the transfer of the patients was proposed, they burned down the buildings.

Thereafter the state health authorities abandoned further attempts to find a new location and bought the present site. New buildings were constructed to house the patients and to serve as dining room and kitchen. Thus the Louisiana Leper Home was established.

It has become an efficiently operated institution with ninety patients by 1921, when its activities were turned over to the Federal Government under the administration of the United States Public Health Service. For many years prior to that time, the Federal Health Authorities had realized the need for a National Leprosarium. Cases of leprosy had been reported from the majority of the states and it was felt that segregation was the only certain means of effectively controlling the spread of the disease.

In February, 1917, Congress enacted legislation to provide funds for the establishment of a National Leprosarium. A Board of Public Health Service officers was appointed to draw plans and select a suitable site for the proposed leprosarium. However, every state approached by the Board refused to cede territory to the Government for such a purpose. It was therefore decided to purchase from the State of Louisiana the property occupied by the Louisiana Leper Home. At least here was an established institution efficiently operated, whose function was not opposed by the neighboring inhabitants.

Thus it was that on February 1, 1921, at a flag-raising ceremony, the patients and property of the Louisiana Leper Home were transferred to the National Leprosarium, the only institution of its kind in the Continental United States. Since then it has been necessary to enlarge it several times through remodeling and reconstruction so as to accommodate an increasing population.

The regulations of the United States Public Health Service provide for the admission of any person afflicted with leprosy from any state of the union. The transportation of persons with leprosy is effected under such sanitary regulations as to protect the public from any danger of infection.

During the last year the final construction program of the National Leprosarium was completed at a cost of approximately three million dollars. At present its modern, fire-proof buildings can accommodate

480 patients and it is truly the foremost institution of its kind in the world.

Into this hospital, to the present date, 1,371 individual patients have been admitted for the treatment of leprosy. These patients have come from 40 states, the District of Columbia, Hawaii, the Philippines and the Canal Zone. Of this number 576 have been admitted from Louisiana, 194 from California, 192 from Texas, 118 from New York, and 76 from Florida.

American-born patients have numbered 967, of whom 523 were natives of Louisiana, 138 of Texas, 58 of Florida, while California, Mississippi, Georgia and Alabama were represented by 26, 17, 11 and 11 respectively.

There were 404 foreign-born patients admitted to the institution, all of whom were in the United States at the time of their admission. The largest number of these were Mexicans, who numbered 148. Natives of the West Indies were second with 44. The rest came from 35 different foreign countries.

During the forty-seven years of operation, there have been 593 deaths in the Carville Leprosarium, and 53 patients have been deported to foreign countries. About 22½ per cent of the patients treated, more than one out of five, or 309 in all, have succeeded in having the disease arrested and have been discharged from the institution as no longer a menace to public health. Of these fifty-eight have relapsed and returned to the hospital for further treatment (approximately 19%).

While leprosy is but a minor health problem in the United States, the segregation of all persons with leprosy is the only known method of eradicating the disease. The National Leprosarium at Carville is a humane institution where the patients are allowed all freedom not inconsistent with the treatment of the disease. It is well organized and fully equipped to cope with leprosy. It is felt that outside patients should know more about the fine quality of this institution and be encouraged to seek treatment there earlier so as to enhance their chances of arresting the disease. Leprologists estimate that there are over 1,000 persons suffering from leprosy in the United States who are not in the National Leprosarium.

There is also a great need for better education of the general public on the true nature of leprosy, that the unreasonable dread of it may be abolished. A case of leprosy in a community still creates general consternation, fear and apprehension, while many cases of open tuberculosis are looked upon with impunity. Yet there is more risk from a single case of open tuberculosis than from several cases of leprosy. This leprophobia, dating back from ancient biblical days, has become so deeply embedded in the mind of the general population of most civilized nations that it will be difficult to eradicate.

Yet, the fact is that, in a civilized country like the United States where leprosy is rare, an adult with ordinary precautions is in little danger when exposed to leprosy. The records of the National Leprosarium at Carville show that, during its 47 years of operation, not a single doctor, sister or other employee who has been in more or less close contact with the patients has developed the disease.

Of course, the historical case of Father Damien, the Belgian priest who, after 16 years of devoted service at Molokai, died of leprosy, is always brought up to prove the contagiousness of the disease. But the living conditions in Molokai in Father Damien's time were rather primitive, and he took no precautions to protect himself. His quarters were unsanitary, his food was prepared by lepers, his clothes were washed by them, and it is said that he even allowed them to smoke his pipe. Under such conditions it is not surprising that he should fall a victim to the disease.

And so the great irrational dread of leprosy lives on. And, for this reason, patients with leprosy are unjustly maltreated as social outcasts by their fellow men. Although it is not a crime to develop leprosy, some of these sick people are made to feel worse than criminals. Thus there is a great need for genuine education of the public in order that scientific knowledge and social enlightenment may replace the common misunderstanding of the disease.

Unfortunately, there is also great need for the education of persons afflicted with leprosy. They should know that their early isolation and treatment in a leprosarium is best for them, their families and the welfare of the public. They should realize that by hiding at home they only expose their children to grave risk of contracting leprosy. For leprosy is a family disease, though not hereditary, and while an unrelated adult is relatively immune, the children of those who have leprosy are remarkably susceptible to it. This is the best argument for early segregation since it prevents the continuous propagation of the disease within the family. Let us spread this doctrine widely wherever leprosy is endemic, that as much good as possible may be done.

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Discussion
on Symposium on Tropical Medicine

Miss Marshall:

I have asked Dr. Farrell, Dr. Faget and Dr. D'Antoni to come to the front

and if any of you want to ask questions you may, and they may ask questions of each other about things which they think might not have been clear for us.

DR. D'ANTONI:

I would like to ask Dr. Faget whether or not anyone having leprosy is compelled to enter the leprosarium, and if there are any national laws regarding the handling of individuals suffering from this disease.

DR. FAGET:

As you know, this is the United States of America and the state rules govern such cases and the federal government has no authority to compel any patient to leave his state in order to come to the national leprosarium, but the states have authority to apprehend the patient and have him come to the leprosarium. As a rule what happens is this: a physician diagnoses a case of leprosy and reports the case to the State Board of Health. The State Board of Health reports the case to the Surgeon General of the United States Public Health Service in Washington, and requests that an officer of the Public Health Service be assigned to effect the transfer of the patient to the national leprosarium. The Surgeon General then communicates with the medical officer in charge of the leprosarium and requests that an officer be assigned to investigate the case and if the diagnosis of leprosy is confirmed, to transfer him to the hospital at Carville. The transportation of the patient is so effected under certain sanitary precautions enroute so that everything in contact with the patient is disinfected, and the patient does not come into contact with the general public while traveling. There is therefore no danger to the general public. All of this has to be done according to interstate quarantine regulations which are very specific in such cases.

DR. FARRELL:

This absence of compulsion surprised our South American students. There, isolation is usually compulsory. Do you think ours is the better system?

DR. FAGET:

Leprosy is not a public health problem in the United States except in Louisiana, Texas and Florida. It is up to the state health officers in those states to enforce the state law and see that the patients are properly isolated. It may be that there are certain rare instances where a leprous patient may be properly isolated in his own community and not allowed any contact with the public in any way. That, however, would be very rare. In all other instances I feel that every case of leprosy should be sent to the National Leprosarium, both for the benefit of the patient and his family and that of the general public.

MISS MARSHALL:

Are they required to take treatment at Carville?

DR. FAGET:

It is the same in leprosy as with every other disease. We offer treatment and try to induce each patient to take the treatment most suitable to his particular case. The great majority of patients at Carville are under some definite treatment; some are taking new experimental treatment.

MR. POSTELL:

Is the number of cases admitted from Louisiana on the decrease or is it relatively stationary?

DR. FAGET:

You will notice in my article in the *New Orleans Medical and Surgical Journal* of the March issue of this year, that I am of the opinion that the number of cases is not on the increase but neither is at on the decrease but stationary as far as I can tell. However, you must remember, as I said in my paper, that leprosy epidemics are not short-lived but are matters of centuries. Therefore we cannot say within a few years whether leprosy is on the increase or decrease in any given locality. Time alone will tell.

MR. POSTELL:

There has been some controversy about the introduction of leprosy into Louisiana; some think it was introduced by Acadians and others think it was probably introduced by slaves or from entrants from the West Indies and that it spread among the Acadians because they were susceptible to it.

DR. FAGET:

The latter is my opinion, based mostly on the writings of Dr. Isidore Dyer whom I consider was an outstanding leprologist of this state.

MRS. TURNER:

Is there much pain associated with the disease?

DR. FAGET:

During leprous reactions there is. During these acute reactions there is liable to be extreme pain from what is known as leprous neuritis. In other words if the nerves are still actively diseased, they may become very painful. As a general rule leprosy is a remarkably painless disease.

MISS BAYNE:

In blood transfusion, is it true that anyone who has had malaria should not be a donor?

DR. FARRELL:

Malaria has been transmitted to others in blood stored for eight days after withdrawal, and by whole blood 37 years after infection. Certain drugs might be added to the stored blood to check the growth of any malaria organisms present. I should believe, however, that in the tropics it is better to use stored blood from residents of northern states than to use blood obtained locally from persons who might have had malaria.

I have a question to ask Dr. D'Antoni. What is the role of the infected food handler in the transmission of amebiasis?

DR. D'ANTONI:

Before answering Dr. Farrell's question, I think it might be well to clear up a point in Dr. Faust's paper. You are probably confused about the difference between amebiasis and amebic dysentery. These names are simply clinical manifestations of the same disease. In one there are acute dysenteric symptoms, named amebic dysentery; when amebiasis is present, there are no symptoms of dysentery, but simply clinical symptoms of a low grade infection.

As to the question of food handlers—in 1933, Col. C. F. Craig was sent to Chicago on the commission to investigate the amebic dysentery epidemic present in that city. He steadfastly held to the idea that the food handlers in the kitchen of the hotel in which the outbreak occurred were spreading the disease. On the first examination they found something like 18 food handlers with the disease; they removed these food handlers and replaced them and

found that a re-check, after three weeks or a month showed about eight new cases had developed the infection. The organism has been demonstrated occurring under the finger-nails, and this was thought to be the method of disseminating the infection. No definite information was ever obtained as conclusive evidence in this epidemic. However, one member of the commission, Dr. O'Connor, was so convinced that the organisms were in the water supply that he drank the water and developed acute amebic dysentery. This was indirect evidence, but has been accepted as the mechanism involved in that particular epidemic.

To my knowledge there have been reported only three instances in which *E. histolytica* have been recovered outside the human body, namely, the transmission by flies; the recovery of the organism in a local institution having a high incidence of amebiasis, in which the toys, beds, dust and even the celanese pants worn by these children were found to be contaminated after the latter had been washed in cold water, and had not been pressed. The third instance, in which *E. histolytica* was demonstrated outside the human body occurred in Libya during World War I. On the coast of this country, it was found that when soldiers lounged on the beach after swimming, the sand became contaminated and the organism could be recovered from the sand.

We say that amebiasis is caused from eating vegetables or drinking contaminated water, and by food handlers. In some families in which we find histolytica cysts present in one member, we usually survey the entire family. Sometimes we find other members infected and sometimes we do not. We might say that although this is indirect evidence, it has a tendency to rule out food handlers as the important individuals in disseminating the disease.

MISS MARSHALL:

What precautions should be taken in going to the tropics, to prevent infection?

DR. D'ANTONI:

There are two important precautions we might take in preventing amebic infection while in the tropics, namely to see that we obtain only uncontaminated drinking water and secondly to avoid eating fresh vegetables. Although these two factors are extremely important, they are not a guarantee against contracting the disease. I should like to answer this question by giving a specific example. Mexico is a hotbed for amebiasis. In Mexico City the incidence of amebiasis is exceedingly high and a large percentage of the people who visit there contract the disease. To obviate the possibility of drinking contaminated water, one may purchase bottled water. This, however, is not always safe, because someone handling the bottle might be infected, or the water used to clean the bottle might be contaminated. As to vegetables, in some areas of Mexico, where water from a lagoon is pumped on the vegetables for purposes of irrigation, at the inlet right near the pump that is used for irrigation is situated an outhouse toilet that empties feces directly into the water, thus pouring almost pure feces onto the vegetables. For drinking water in a hotel, it is advisable to allow very hot water to run out of the faucet and allow it to stand in a container to cool. This water is safe for drinking. As to vegetables, it is advisable never to eat any raw vegetables, but to eat only those that have been boiled.

DR. FAGET:

What about danger of contact with acute amebic dysentery? Is there any real danger in contact with acute amebic dysentery?

DR. D'ANTONI:

Dr. Swartzwelder has worked out this problem in dogs; he was able to infect dogs with the motile state of the organism. In dysentery you always find the motile form, whereas in the stools where there is no dysentery, there are cysts. These cysts always pass to the duodenum and infect man.

DR. FARRELL:

No correlation has been demonstrated, has it, between the presence of amebic infection in food handlers and the occurrence of amebic infection in those they serve?

DR. D'ANTONI:

No, that is just a supposition and the direct proof is lacking.

MISS MARSHALL:

We are very grateful to you for being here and discussing these subjects for us.

SUBJECT HEADINGS AND THE GROWING LIBRARY*

By HELEN G. FIELD

THE POSSIBILITY of vicarious learning may be seriously doubted, but never so seriously as to prevent papers like this, in which a large medical library hopes to benefit smaller ones by an account of how its subject catalogue got out of hand.

The Library of the New York Academy of Medicine is nearly one hundred years old, ninety-five, counting from the year the first book was donated. It was twenty-eight before it had 1,000 volumes, yet at sixty-eight it had 100,000, and it had 200,000 by the time it reached the age of eighty-nine. The rapidity of the library's growth can also be illustrated by the fact that in 1907, when the library was fifty years old, the librarian had three assistants. Today he has a staff of thirty-three.

The subject catalogue was started in 1901 when there were 55,000 volumes in the library. It was modeled on the *Index-Catalogue* of the Army Medical Library, then providing one complete series and six volumes of the second. The subjects had been evolved by the Army Medical Library to index up to 138,000 volumes (not to mention its unbound material), and were serviceable ones, though wordy and ponderous, as for instance: HABITATIONS FOR THE LABORING CLASSES AND THE POOR.

The *Index-Catalogue* has been free to modify its subjects every twenty years or so, and by the time its third series was well under way, we were too firmly stuck in our own wheel-tracks to follow its changes. In 1929 we copied the subjects in use in the New York Academy of Medicine Library catalogue to form the "Subject Authority File," now an imposing edifice of 78 trays, housing 50,000 cards, which respectful librarians and students come occasionally to consult, only to be baffled by the admonition that in spite of its title it is anything but an authority. There never has been time to make it one. The library has grown so rapidly that revision of this first draft of an authority file has been indefinitely postponed, and consequently its defects have been perpetuated, even multiplied. An increase in the number of people who assign headings, together with the insufficiency of definitions and cross references, has resulted in a wide variety of subject interpretations. There are too many headings to choose from, and the size of the subject catalogue is so great that duplications have gone unperceived until it is too late to

* Presented in part at the 44th Annual Meeting of the Medical Library Association, New Orleans, May 7-9, 1942.

change them without great cost. HOSPITAL MANAGEMENT and HOSPITALS—MANAGEMENT may flourish simultaneously when they are separated by three full trays of cards. You see that HOSPITALS—DESCRIPTIONS comes in between the two. The possible combinations of: BOTANY; DRUGS; HERBALS; MATERIA MEDICA; MEDICINES; PLANTS; and VEGETABLES, with: PHARMACOLOGY; THERAPEUTICS; and TOXICOLOGY are greater than I like to contemplate. Lack of time explains, though it does not excuse, making new headings without re-examining the old ones related to them. It appears to have been an almost invariable rule in our catalogue, that by the time an eponym was made into a heading the original source of the eponym had been forgotten. Kielland's own paper on his forceps remained in the general group under: FORCEPS——OBSTETRICAL, after a separate heading, KIELLAND'S FORCEPS, had long been in use. Because Schick described a cutaneous reaction without labeling it "Schick's reaction," himself, his work until recently was omitted from the cards under: SCHICK'S REACTION.

The *Quarterly Cumulative Index Medicus Subject Headings* may be a list amply adequate for small or even fairly large libraries, but it will not cover the needs of an *old* library. An index to current material can always sacrifice consistency to accuracy and the most recent usage, and is not equipped to help an established library out of its Procrustean difficulties in correlating new books with old. The New York Academy of Medicine catalogue, for example, has evidence of the time when physics was physics, and chemistry was chemistry, and physiology was something else. The first users of the phrase "Physiological chemistry" may have thought the term would cause no further trouble, but they simply didn't foresee how the subject would develop.

To find how difficult it is to keep like material together while the treatment and vocabulary of a subject changes, contemplate the number of subjects necessary to search in a comprehensive study of "Criminal psychopathology." Or, how are you going to reconcile the new "Psychosomatic medicine" with the "Body and mind" or "Mind versus body" of the nineteenth century?

Since, therefore, a library subject catalogue inevitably becomes its own authority, a separate subject authority file cannot be started too soon. Only by having such a file can you trace your references, and it is the references that define a subject. You may not be sure how AUDITION is to be used, but when you see that references are made from: ACOUSTICS; HEARING; SOUND——PERCEPTION OF; and that references are made also to: ACOUSTICS; DEAFNESS; EAR; NERVE——AUDITORY, you have something to work with.

The processes involved in making a subject authority file are presented in the forthcoming *Handbook of Medical Library Practice*. But those who feel they have no time or strength for undertaking a file of such

proportions could profitably begin with a file of new headings and difficult decisions. Keep, on cards, as well as in the margins of the *Quarterly Cumulative Index Medicus* list, if you use that, a dated record of problems, with their solutions (or compromises) and the sources of information which helped you reach a decision in each case. The date is the most important part of the record. Then if you later find the heading inadequate or inaccurate you may be able to see why and how a precedent was established, and to estimate the risks involved in breaking it. You will not be much troubled by conflicting authorities in the literature. You may find twenty experts who state a problem of subject classification, but you are lucky if you find more than one who offers a plan for dealing with it. When you do find good authority for a subject arrangement that holds your difficult material without leaks, use it with a free mind, after due acknowledgment in your file of decisions.

Sooner or later you will have difficulty with changing usage, in which authorities cannot always help much. I have been struggling for six months to bring the dictionary, the various parts of the world, and the different periods of history into accord on the definition of the word "Clinic." I report total failure. I cannot even discard the term in favor of less ambiguous ones because it is in such constant use. There is both comfort and profit for the assigner of subject headings in a book on semantics called *Language in Action* by S. I. Hayakawa (New York: Harcourt [1941]). I quote from pages 57-58:

> "*The writer of a dictionary is a historian, not a law-giver.* If, for example, we had been writing a dictionary in 1890, or even as late as 1919, we could have said that the word 'broadcast' means 'to scatter,' seed and so on; but we could not have decreed that from 1921 on, the commonest meaning of the word should become 'to disseminate audible messages, etc., by wireless telephony.' To regard the dictionary as an 'authority,' therefore, is to credit the dictionary writer with gifts of prophecy which neither he nor anyone else possesses. . . . Looking under a 'hood,' we should ordinarily have found, five hundred years ago, a monk; today, we find a motorcar engine."

If a catalogue is permanent, a book must be considered in relation to the whole library collection, known present and surmised future, of which it is to be a part. I do not believe that the Army Medical Library changes a heading without torment, but it can at least manage it without all the sorting, erasing, retracing, retyping, and refiling that a change in a card catalogue involves. Look up CALCIUM in all four series of the *Index-Catalogue* and notice what happens to it before and after the word "Metabolism" came into frequent use. Or consider how RHEUMATISM; RHEUMATIC FEVER; and ARTHRITIS are employed in the different series.

Here we begin to see that the *Index-Catalogue* is more than an index.

It is also a part of the literature it indexes. By its selection and arrangement of items, by its emphasis and terminology, it constitutes an outline of the history of medical thought. It is significant that DIET (or DIETETICS) occupies 12 columns in the first series, 25 in the second, drops to 15 columns in the third, and increases to 54 in the fourth, and that similar figures for DIPHTHERIA run: 59, 157, 86, 138. (The dates of the *D* volumes in the four series are, respectively, 1882, 1899, 1923, and 1939). The rise of FOCAL INFECTION is possible to trace, and it will be interesting to see what becomes of it, hereafter.

That the changing subjects of the *Index-Catalogue* require long use and great familiarity before they yield their full worth is undeniable. This is a small price to pay for having the riches of the Army Medical Library made available without geographical limitation. Libraries such as that of the New York Academy of Medicine, which do not commit their catalogues to publication in book form, have a different, a complementary function. Here the eras and fashions of medicine are not so clearly reflected. The aim is to reconcile past and present subject headings and to keep the main ones broad and flexible enough for continued use with a minimum of changes and a minimum of "See also" references.

To pursue this goal of making the greatest amount of material available in the shortest time involves considering a problem that a large library cannot avoid, while a very small library may never have encountered it. How many people should work with the subject catalogue and subject authority file? Can you have too few cooks as well as too many for the best broth? Most medical librarians would probably agree with Dr. Mayer of the Army Medical Library when he says* that final selection of subject headings should be made by one editor rather than by several subject specialists. Subject borderlines are hard to distinguish (e.g., ELECTRICITY; LIGHT; RADIOLOGY) and one person can best coordinate various special vocabularies. LABOR is not to the United States Government what LABOR is to the obstetrician, as medical librarians well know. On a smaller scale, there can be confusion between SPONGES in biology and SPONGES in surgery.

Granted that the subject catalogue must be worked over as a whole, and not in sections, and that final choices should be the responsibility of one person, there is still the danger of too individual a slant in definition and logical arrangement. The point of view of those who look for books must always supplement the point of view of those who put them away. This leads to argument, and argument takes time, but it is the only basis for a healthy subject catalogue. I took it as a compliment to the institution when the newest cataloguer, who had previously worked in a bacteriological laboratory, said to me, anxiously, "I have always

* In his letter of April 16, 1942, to the author.

heard that library work was bound by the most exact rules, but when I want to know how something is to be done here, everyone I ask gives me a different answer." In the Library of the New York Academy of Medicine, headings are assigned and suggestions made by six people, representing the departments of cataloguing, reference, bibliographical research and rare books and history. These suggestions, with those that come, too infrequently, from readers, are assimilated on one desk. This system would be ideal, were it not for the risk, on the one hand, of suffocating under the avalanche of suggestions that descends as soon as one has been followed, or, on the other hand, of discouraging the most valuable critics by shelving their shocking discoveries to be attended to sometime in the next five or six years.

About five years ago the errors, omissions and ambiguities of the New York Academy of Medicine subject catalogue caught up with the pressure of incoming material and forced attention on themselves. Rules and policies were formulated in writing, a start was made at tracing references, a little badly needed revision was done and more was recorded for future attention. For the last eighteen months we have been making a survey of the ground to be covered in a fairly complete revision of our subject catalogue and the development of a sound, flexible subject authority.

The first essential step in general revision appeared to be the standardization of subheadings. It is hard to believe how far a catalogue can stray from the path of consistency if you don't watch it, but the New York Academy of Medicine offers the following variants of ABNORMAL and ABNORMALITIES, to take one example out of many hundred such:

ABNORMAL
ABNORMAL, AMOUNTS OF
ABNORMAL, DEPRAVED OR EXCESSIVE
ABNORMAL AND DISORDERED
ABNORMAL, DISORDERED OR COMPLICATED
ABNORMAL FORMATION OF
ABNORMAL AND PATHOLOGICAL
ABNORMAL AND VICARIOUS SECRETION OF
ABNORMALITIES OF
ABNORMITIES OF
ABNORMITIES AND DEFORMITIES OF
ABNORMITIES AND DISEASES OF
ABNORMITIES, DISEASES AND OBLITERATIONS OF
ABNORMITIES AND DISORDERS OF
ABNORMITIES AND DISPLACEMENTS OF
ABNORMITIES AND JURISPRUDENCE OF
ABNORMITIES AND MALFORMATIONS OF
ABNORMITIES AND MALPOSITION OF
ABNORMITIES AND PATHOLOGY OF

Faced with such a lavish variety of forms, we decided that selection could not be made at the typewriter by decree, but would have to be based on the test of usage under all conditions. Accordingly, all subheadings were copied from the subject authority file. A separate slip was made for every subheading each time it appeared, with the main heading indicated below, thus:

TREATMENT OF	TREATMENT OF	TREATMENT OF
MEASLES	TYPHOID	YELLOW FEVER

The grand total was in the neighborhood of 20,000 slips which filled sixteen catalogue-card boxes. From these we made a list on sheets of the different subheadings. They came to 5,953. Next, this list was divided into three classes. Class I consisted of those that were obviously safe to include as they were in any standard list, e.g., IN CHILDREN; HISTORY OF; SURGERY OF; TREATMENT OF. None were checked unless they were used under more than one or two main headings, no matter how sensible they appeared to be. ANTERIOR; BINOCULAR; and INSTRUMENTAL were not used in enough places in the catalogue to warrant putting them in a list of standard subheadings.

In class II were put the subheadings that were peculiar to this library or that were so specialized that they did not belong in a standard list, e.g., KOLMER'S TEST; LITERARY; PROGRAMS; BY ROYAL TOUCH.

The subheadings that were puzzling or in certain need of correction were put in class III. These were all looked up in the subject catalogue and the cards under each were counted or estimated. This count gave not only a good basis for deciding which subheadings would be most useful to keep, but also a clear idea of how much work would be involved in correcting the discarded ones. Of our 5,953 subheadings, 46 per cent need revision, and we estimate that 40 per cent could be done away with altogether, to the great increase of the catalogue's usefulness. There are 734 subheadings represented by only a single card each. They are the result of confusion between *titles* and *subjects*. For instance, an article entitled, *Laggards in our Schools* was happened on in the subject catalogue, all by itself under: SCHOOL-CHILDREN—LAGGARDS, although it belonged with the material under: CHILDREN—DEFECTIVE. It was, for all practical purposes, lost, for LAGGARDS is hardly a subject that springs to the searcher's mind.

Some of our preconceptions were confirmed and some were modified. A prejudice against the word "and" in headings was strengthened to a dogma. Never put more than one noun or adjective into any section of a heading if you want to be able to subdivide it without such poor results as the following:

CAUSES OF
CAUSES OF—ADHESIONS

CAUSES AND PATHOLOGY OF
CAUSES AND PATHOLOGY OF—ADHESIONS
CAUSES AND PATHOLOGY OF—TRAUMA
CAUSES OF—TRAUMATIC

There are exceptions. MANAGEMENT AND REGULATIONS is to be kept as a subheading under HOSPITALS, and of course such phrases as ACUTE ANTERIOR; ACUTE ASCENDING; SPECIFIC GRAVITY, can be considered almost as single words.

We expected to find that we could easily dispense with "by," "from," "in," "of," and "to." Our subjects are rich in prepositions, again because of the influence of the Army Medical Library's early choices. To our surprise we came to the conclusion that a blanket rule on the omission of prepositions would be foolish, that there are time when clarity is lost rather than gained by this economy of words. MALARIA—THERAPY is capable of two interpretations. Why worry about perfect consistency in the use or omission of prepositions since they do not affect alphabetical filing? It goes without saying that phrases which do affect filing (such as, EFFECTS OF; INFLUENCE OF ON; RELATIONS OF) are to be avoided.

Lastly, we discovered that in many instances it is desirable to keep more than one form of a subheading for a standard list, even though it means that the subject assigner will have to verify the one to be used with any given main heading. (In most cases, you will have to consult your subject authority in order to make sure that the subject you want has been subdivided. In a printed list such as that of the *Quarterly Cumulative Index Medicus* space may be saved by listing the subheadings at the front of the book and not repeating them under the main headings each time; in a card authority file this repetition is absolutely necessary.) We have kept ABNORMAL as well as ABNORMITIES; AGE; AGE INCIDENCE; and AGED; as well as OLD AGE, in our first selection of subheadings for use in the Library of the New York Academy of Medicine. At present 1,421 subheadings have been culled from the original 5,953. We expect to cut these down at least to 1,000 by revision and by excluding the ones limited to special use. The *Quarterly Cumulative Index Medicus* gives 52 in the "Explanation" of its *Subject Headings and Cross References* (2. ed. Chicago: American Medical Association, 1940.)

We have no doubt an exalted notion of what our subject catalogue might eventually be, but whatever is accomplished or left undone, we would be enormously pleased if other libraries could profit in any way by our struggles. It is with deep earnestness that we admonish you to prepare for growth, whatever your present size or situation, and there is nothing that will make you more thankful when you are big than a subject authority file started when you were small.

BIBLIOGRAPHY

A FIVE-FOOT SHELF ON AVIATION MEDICINE*

DR. J. F. FULTON and DR. E. C. HOFF

INTRODUCTION

NEED HAS BEEN felt for available texts on aviation medicine suitable for ready reference of flight surgeons at training and patrol stations, and also at island bases and on naval units at sea. The following titles have been selected on the basis of a preliminary list which was circulated for criticism to the Committee on Aviation Medicine and its liaison officers; and it has in reality resolved itself into two lists: (i) the five-foot shelf for the larger training stations, comprised of all the titles below, and (ii) a two-foot shelf for ships at sea and the smaller bases, comprised of items below numbered 3, 5, 6, 7, 9, 10, 11, 13, 17, 18, 22, 24, 25, 27, 28, 29, 30, 31 and 32.

The list divides itse f for both categories into three parts: (i) General physiological and medical texts with sound treatment of basic topics such as respiration, oxygen, the circulation, aero-embolism, and the special senses; (ii) Monographs and journals on aviation medicine as such; (iii) The more specialized monographs on respiration, exercise, high altitude physiology, and the special senses. There appear to be few, if any, general treatises on night vision, fatigue, acceleration, personnel selection, etc., which deal directly, or even indirectly, with the particular problems of aviation physiology. For this one must consult journal literature, a key to which will be found in a forthcoming Bibliography of aviation medicine (see No. 11 below) to be issued June 1 by the National Research Council (Charles C Thomas, publisher)

There are a number of titles which can not be included in the shelf, although important and useful, because some are out of print, others still in progress of publication. They are as follows:

ANDERSON, H. Greame. The medical and surgical aspects of aviation. Oxford Medical Publications. New York, Oxford University Press, 1919. xvi, 255 pp. (Out of print)

* Compiled at the request of the U. S. Army and Navy Air Corps for the Committee on Aviation Medicine, Medical Division, National Research Council, Washington, D.C.

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U. S. WAR DEPT. Division of military aeronautics. Air service medical. Washington, Government printing office, 1919. 446 pp. (Out of print)

THE FIVE-FOOT SHELF

I. General Physiological and Medical Texts

The items for the "Two-foot Shelf" are preceded by an asterisk. The "Five-foot Shelf" is made up of all items.

1. BEST, C. H., and TAYLOR, N. B. The physiological basis of medical practice; a University of Toronto text in applied physiology. 2d ed. Baltimore, William Wood and Co., 1939. xvi, 1872 pp. $10.00
2. CARLSON, A. J., and JOHNSON, V. The machinery of the body. 2d ed. Chicago, University of Chicago Press (1941). xx, 620 pp. $4.00

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4. DOUGLAS, C. G., and PRIESTLEY, J. G. Human physiology, a practical course. 2d ed. New York, Oxford University Press, 1937, xii, 229 pp. $4.25

*5. HOMANS, John. Textbook of surgery. 5th ed. Springfield, Illinois. Charles C Thomas, 1940. xii, 1272 pp. $8.00

*6. MACLEOD'S Physiology in modern medicine, edited by Philip Bard. 9th ed. St. Louis, C. V. Mosby Co., 1941. xxxvi, 1256 pp. $8.50

II. Monographs and Journals on Aviation Medicine

*7. ARMSTRONG, H. G. Principles and practice of aviation medicine. Baltimore, Williams and Wilkins Co., 1939 (repr. 1940). xii, 496 pp. $6.50

8. BULLETIN OF WAR MEDICINE. Published bi-monthly by the Medical Research Council. Sir H. Harold Scott, Director. Vol. 1-2, 1941-42, current and available. Contains abstracts on aviation medicine. Orders

may be placed with the British Library of Information, 30 Rockefeller Plaza, New York City. $4.50

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III. Monographs on Special Topics

15. BARCROFT, J. Features in the architecture of physiological function. New York, The Macmillan Co., 1934. x, 368 pp. $5.25

16. BRADFORD, F. K., and SPURLING, R. G. The intervertebral disc with special reference to rupture of the annulus fibrosus with herniation of the nucleus pulposus. Springfield, Illinois, Charles C Thomas, 1941. viii, 158 pp. $5.00

*17. DILL, D. B. Life, heat, and altitude; physiological effects of hot climates and great heights. Cambridge, Harvard University Press, 1938. xiv, 211 pp. $2.50

*18. DRINKER, C. K. Carbon monoxide asphyxia. New York, Oxford University Press (1938). xx, 276 pp. $4.50

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*29. U. S. SURGEON-GENERAL'S OFFICE. Notes on eye, ear, nose and throat in aviation medicine. War Dept. Technical manual. TM 8-300. Washington, Govt. print. off., 1940. 286 pp. 35 cents.
*30. U. S. SURGEON-GENERAL'S OFFICE. Outline of neuropsychiatry in aviation medicine. War Dept. Technical manual. TM 8-325. Washington, Govt. print. off., 1940. 172 pp.
*31. U. S. SURGEON-GENERAL'S OFFICE. Notes on psychology and personality studies in aviation medicine. War Dept. Technical manual. TM 8-320. Washington, Govt. print. off., 1941. 335 pp. 35 cents.
*32. U. S. WAR DEPT. Standards of physical examination for flying. Medical Dept. AR 40-110 (1-2). Washington, Govt. print. off., 1940. 32 pp. 5 cents.
33. VAN LIERE, E. J. Anoxia; its effect on the body. Chicago, University of Chicago Press, 1942. xiv, 269 pp. $3.50

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ADDENDA

34. GEMMILL, C. Physiology of aviation. Springfield, Ill., Charles C Thomas, 1942 (in press, approximately 100 pp.)
35. LILJENCRANTZ, E. The use of the eyes at night. Navy Department, Bureau of Medicine and Surgery, Night Vision Board, 1942. 23 pp. (in press)

OBITUARIES

CHARLES G. TOEPPER

THE DEATH of Mr. Charles G. Toepper occurred suddenly on March 21, 1942, at the Bay Pines Veterans' Hospital, Florida. Mr. Toepper was for many years in charge of the main reading room of the Army Medical Library and was well known to thousands of patrons of the Library, both in person and through the medium of correspondence. His death marks the breaking of the last link with the traditions of the Library of a generation ago, and the passing of a fine gentleman of the old school. His personal knowledge of the holdings of the Library was unrivaled.

Mr. Toepper was born February 9, 1874, in Missouri and he entered the Government Service of the U. S. Navy in 1890, serving in the Ordnance Department until 1893. He was a student at Michigan Military Academy for a year, enlisting in the U. S. Army in 1895 and serving as a Sergeant in the Sixth U. S. Cavalry until shortly before the outbreak of the Spanish-American War. He was in civil employ at the Washington Navy Yard, and in the Office of the Superintendent of the State, War, and Navy Building until 1899 when he moved to Joplin, Missouri, to enter business for the next five years. In 1905 Mr. Toepper came to the Army Medical Library in a civil capacity, but remained only one year when he went to the Philippines as Inspector in the Philippine Constabulary, serving as a Lieutenant. He returned to the Army Medical Library in 1908 and served continuously therein for ten years leaving to accept a commission as a Captain of the Ordnance Department during the World War. He was honorably discharged in 1920 and returned to the Army Medical Library. Mr. Toepper became an assistant librarian in 1924 and retired from the Army Medical Library on account of ill health on January 31, 1942.

Mr. Toepper was twice married and leaves a widow. He was the father of two daughters. Burial was in Arlington National Cemetery with military honors.

OUR CONTRIBUTORS

MARY LOUISE MARSHALL was born in Salem, Illinois. She was educated at the Illinois Woman's College (now MacMurray College), the Southern Illinois Normal University, and the Library School of the University of Wisconsin. After several years in school and public library work, she came to New Orleans in 1920 and took charge of the organization of the Library of the Orleans Parish Medical Society. In 1927, the Library of Tulane University School of Medicine (now the Rudolph Matas Medical Library of Tulane University) entered a joint administration with the Medical Society Library under Miss Marshall's direction, and has so continued to date. She has served the Association successively as Chairman of the Membership Committee, Treasurer, member of the Executive Committee, and Chairman of the Executive Committee. Miss Marshall is now President of the Medical Library Association and is serving in her second year in that post, having been reëlected at the 44th Annual Meeting.

DR. HAROLD CUMMINS came from Markleville, Indiana and attended the University of Michigan where he graduated in Arts in 1916. He received his doctorate in Philosophy at Tulane University in 1925. He has been Assistant in Zoölogy and Assistant Professor of Anatomy at the University of Michigan. He is now Professor and Head of the Division of Microscopic Anatomy in the School of Medicine at Tulane University. Dr. Cummins is a member of many scientific societies and fraternities and is the author of numerous scientific papers which have been published in technical journals.

ROBERT JAMES USHER is the librarian of the Howard-Tilton Memorial Library of Tulane University. Mr. Usher has been in active library work for more than thirty years, having served in the John Crerar Library and the University of California Library prior to coming to New Orleans. He has been the president of the Louisiana Library Association and the Southwestern Library Association. He is a member of numerous literary societies.

DR. ALBERT E. FOSSIER is a native of New Orleans. He studied liberal arts at Spring Hill College receiving his A.B. and M.A. degrees. In 1902, he was graduated in Medicine by Tulane. His specialty is Internal Medicine with special reference to Cardiology. In 1920, Dr.

Fossier was Chairman of the Committee on Arrangements for the annual convention of the American Medical Association held in New Orleans. In 1927, he was elected to the Presidency of the Orleans Parish Medical Society. He has been a teacher of Medicine since the year 1940, and only recently has retired from the Chair of Clinical Medicine at Tulane. Dr. Fossier has made many contributions to medical literature, notably on the heart and great blood vessels. He is also the author of many works on the medical history of Louisiana.

MILDRED V. NAYLOR is well known as the librarian of the Library of the Academy of Medicine of Northern New Jersey in Newark. A biographical sketch of Miss Naylor appeared in the January 1942 issue of the *Bulletin*.

DR. GEORGE WALTER MCCOY is a native of Cumberland Valley, Pa., and received his degree in medicine from the University of Pennsylvania in 1898. He entered the Public Health Service in 1900, serving in San Francisco and in Washington, D.C., and was in charge of the U. S. Leprosy Station in Honolulu for four years. He has been Professor of Preventive Medicine and Public Health and Director of Department in the Louisiana State University Medical School since 1938. Dr. McCoy is a member of several scientific societies and is the author of numerous papers on plague, leprosy, and tularemia.

DR. ERNEST CARROLL FAUST was born at Carthage, Missouri, graduating in Arts at Oberlin College in 1912. His graduate work was done mainly at the University of Illinois. He received his M.A. in 1914 and his Ph.D. in 1917. During the First World War, he gave courses in Military Hygiene. In 1919 he was called to the Peking Union Medical College, Peking, China, established by the Rockefeller Foundation for medical education and research. During the eight years he was connected with this institution, Dr. Faust had an opportunity to study Clinical Parasitology and Tropical Medicine in the Orient, not only in China and other parts of the Far East, but also in India and Egypt. In the sabbatical year of 1923-24, he was Visiting Associate Professor of Helminthology in the Johns Hopkins School of Hygiene and Public Health. In 1928, Dr. Faust became Professor of Parasitology in the Department of Tropical Medicine at Tulane University and since 1938 he has been Acting Head of the Department of Tropical Medicine. He is now President of the American Society of Tropical Medicine, and Consultant to the Secretary of War on Tropical Medicine and Epidemic Diseases in the Army. He is also directing special postgraduate courses in Tropical Medicine at Tulane University for Latin-American physicians and for medical officers in our Armed Forces.

DR. ELLISTON FARRELL is from Reading, Pennsylvania, and received his B.A. from Yale in 1926. He was graduated in medicine from Johns Hopkins in 1930 and served internships in Baltimore and in San Francisco until 1932 when he went to China and to India for a period of three years. He studied at the London School of Tropical Medicine and Hygiene, receiving his diploma in 1936. Dr. Farrell taught and practiced medicine in Brooklyn, New York for the five years preceding his acceptance in 1941 of an Assistant Professorship at Tulane University School of Medicine.

DR. GUY HENRY FAGET of the U. S. Public Health Service is a native of New Orleans and has served in many different parts of the United States. He has also served as a medical officer in the British Colonial Service, British Honduras, 1916-1922. He has been in charge of the National Leprosarium at Carville, Louisiana since 1940.

HELEN G. FIELD has been in charge of classification and subject headings in the New York Academy of Medicine Library since February, 1939. She was born in Milton, Massachusetts, and was graduated from Radcliffe College in 1928. Her library experience began with two years in the Bibliographical Department of the New York Academy of Medicine, and this was continued by five years in the Rare Book and History Room there, and one year (1937-1938) at the School of Library Service, Columbia University.

DR. JOHN FARQUHAR FULTON'S birthplace was St. Paul, Minnesota. He was graduated from Harvard in 1921, receiving his degree of M.D. there in 1927. He was a Rhodes Scholar at Oxford from 1921-1923, getting his doctorate in Philosophy in 1925. He was a Fellow of Magdalen College from 1928-1930. Dr. Fulton has received also honorary degrees from Yale, Kenyon, and Oxford. He has been Sterling Professor of Physiology at Yale since 1930. He is a member of many national and international scientific societies, and is widely known for his writings and research in the field of experimental physiology and in neurophysiology. He is the author of numerous scientific books and papers, and has been Vice-President of the Medical Library Association for the past two years.

DR. EBBE CURTIS HOFF received his B.Sc. degree from Washington State University in 1928 and his doctorate in philosophy in 1932. He took his M.A. at Oxford in 1936, his L.R.C.P. in 1940, and his M.R.C.S. in the same year. Dr. Hoff is now in the Department of Physiology, Sarah Lawrence College.